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S. HRG. 100-835

TELECOMMUNICATIONS SERVICES FOR THE HEARING IMPAIRED

HEARING

BEFORE THE

SUBCOMMITTEE ON COMMUNICATIONS

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

SECOND SESSION

ON

S. 2221

TO EXPAND OUR NATIONAL TELECOMMUNICATIONS SYSTEM FOR THE BENEFIT OF THE HEARING-IMPAIRED, AND FOR OTHER PURPOSES

JUNE 23, 1988

Printed for the use of the Committee on Commerce, Science, and Transportation

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TELECOMMUNICATIONS SERVICES FOR THE HEARING-IMPAIRED

THURSDAY, JUNE 23, 1988

U.S. SENATE,
SUBCOMMITTEE ON COMMUNICATIONS,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The subcommittee met at 9:35 a.m. in room SR-253, Russell Senate Office Building, Hon. Daniel K. Inouye (chairman of the subcommittee) presiding.

Staff members assigned to this hearing: Toni Cook; Tom Cohen, staff counsels; and Gina Keeney, minority staff counsel.

OPENING STATEMENT BY SENATOR INOUYE

Senator INOUYE. Good morning.

This morning we will consider S. 2221, a bill to improve the ability of deaf and hearing impaired persons to communicate with each other and with the Federal government. This bill would improve the Federal relay system so that deaf persons can communicate with hearing persons over the telephone network.

It also would require certain Federal agencies to install telecommunication devices for the deaf, also known as TDD's, so that deaf persons can obtain access to their Federal government just like everyone else.

This hearing demonstrates this committee's continued interest in improving the ability of deaf and hearing impaired persons to communicate over the nation's telecommunications network.

Just this past March, this subcommittee held a hearing on S. 314, the Hearing Aid Compatibility Act of 1988. This bill, which would require almost all telephones to be hearing impaired compatible, was reported out of the Commerce Committee last month and is now awaiting passage by the Senate.

Our consideration of this bill also reflects this nation's growing awareness of the needs of deaf persons in this country.

The tremendous energy and assertiveness of the deaf students at Gallaudet University this spring inspired everyone in this country. Their persistence in believing what is right eventually succeeded in selecting Dr. Irving King Jordan to become president of that university, the first hearing impaired president that university has ever had. And I am very pleased that Dr. Jordan has agreed to testify here this morning.

Congress has listened to the voices of these courageous students and has responded. In addition to moving the Hearing Aid Compat-

ibility Act, Congress is also considering establishing an institute to study the needs of the deaf within the National Institutes of Health.

In a similar vein, Senator Hollings has recently introduced a measure to improve the ability of blind persons to find airplane seating.

The ability to enjoy life to its fullest cannot be compromised. We must continually seek to ensure that physical disabilities do not impede one's opportunity to lead a productive and rewarding life.

S. 2221 may remove one more barrier from the goal of providing each person with the full and equal rights of citizenship. It is my hope that we can explore the needs of deaf persons this morning and discover how we can take the next step toward meeting those needs in an efficient and effective manner.

We have several witnesses here this morning who will help us greatly in this endeavor, and I look forward to hearing from each one of them.

As I understand it, some states have already taken steps to provide their own telephone relay networks. The FCC is currently considering how to establish a Federal relay network, and the Architectural and Transportation Safety Compliance Board has been operating an experimental Federal relay network for the past two years.

In addition, some deaf persons currently employ TDD's to communicate with each other. The Social Security Administration is experimenting with installing TDD's so that deaf persons can communicate concerning their concerns just like every other citizen.

But at this time, the telecommunications needs of deaf persons are not being fully met. This is especially true of the Federal government, whose policies in this regard are random at best.

It is our goal here this morning to find out how Congress can help to improve this process at the lowest possible cost. I am certain that some of you have tried to communicate with this committee and members of the Congress, but found it extremely difficult because we do not have TDD's in this Congress.

And that is what this meeting is all about. By introducing this bill, Senator McCain of Arizona has identified a clear need that must be remedied, and I wish in behalf of the committee to congratulate Senator McCain for his efforts, and I hope that we can work together to move this bill forward.

I would like to introduce the author of this measure, Senator McCain.

OPENING STATEMENT BY SENATOR McCAIN

Senator MCCAIN. Thank you very much, Mr. Chairman. And I thank you for your kind words.

The reality, the way things work around this place, is this hearing would not be held today if it were not for the interest, the dedication, and the years of concern displayed by our Chairman, Senator Inouye, whom I have had the privilege of working with on a variety of issues, including his commitment to the betterment of our Native American population.

So I thank you, Mr. Chairman, for allowing this legislation to be heard and for your very critical and crucial support in an overall effort to give 24 million Americans who are hearing impaired the same rights and privileges enjoyed by the rest of our population.

I think what we are talking about here this morning is equal opportunity. 24 million Americans who are hearing impaired pay their taxes. They are taxpaying Americans. They are contributing members of our society.

It seems to me that the least we can do is provide them with the capability of communicating with the Federal government and the organizations which are set up to provide services to all Americans.

Mr. Chairman, this country possesses one of the most technologically advanced telecommunications systems in the world. We have the technology to incorporate the hearing impaired world into our national communications network. I think we must now come up with the political will to require this technology to be put into place.

It is my belief that not only will the hearing impaired population benefit from this effort, but so will the rest of our population. Our nation has made the decision, which, in my opinion is indeed correct, that people with disabilities have much to contribute to our society. Equal access to all the essential tools of modern life is a must if we are to receive these benefits.

I have no illusions that S. 2221 fully integrates the hearing impaired community into our nation's communications network, but I believe it makes a good start. This measure requires the construction of a telecommunications network with and within the Federal government by expanding the existing Federal relay system and providing for the installation and use of devices known as TDD's.

That the existing Federal relay system is inadequate cannot be debated. Last week I had my staff attempt to contact the Federal relay. On Monday, my staff was informed of the hours the relay supposedly operated, that the office was currently closed, despite it being within the hours just quoted, and advised to call back tomorrow.

On Tuesday when my staff called, they were informed that no one was available to answer the call, and told not to leave a message because the office will be closed all day.

When my staff called on Wednesday and Thursday, they received the same message.

Obviously, this situation is not acceptable. The legislation before us provides for the expansion of the system to meet minimum service requirements.

Secondly, the legislation requires all appropriately sized Federal Departments and agencies to be equipped with an accessible TDD and, where feasible, a station equipped to accommodate portable TDD's. The purpose of this is to eventually give hearing impaired individuals real time access to our Federal government.

The ability of 24 million tax-paying Americans to communicate with the Federal government and the ability of the government to communicate with them is a fundamental necessity. The removal of impediments to communications is an important step towards fully integrating the hearing impaired into the business of this nation.

This is not only in our nation's best interest, it is this group's members' right as American citizens, as participating members of our society.

And I look forward to today's testimony.

Mr. Chairman, I request unanimous consent to have included in the record various letters that I have received, one from Dr. Jordan, President of Gallaudet University, from Telecommunications for the Deaf, and for the American Deafness and Rehabilitation Association.

Senator INOUYE. Without objection, so ordered.

Senator MCCAIN. Finally, Mr. Chairman, I will not talk longer because our witnesses to follow will be far more eloquent than I can be on this issue. But I again want to express my appreciation to you for your continuing concern involved in the effort to provide 24 million hearing impaired Americans with an equal opportunity.

Senator INOUYE. I thank you, sir.

Before proceeding, I received a statement from the junior Senator from Massachusetts, Senator John Kerry and also one from Seantor Packwood. They wish to have them made a part of the record along with the bill. Without objection, so ordered.

[The statements and bill follow:]

OPENING STATEMENT BY SENATOR KERRY

Mr. Chairman. I would like to commend you and the members of this subcommittee for initiating discussion today on a problem that is faced by millions of individuals in this country. I am referring to the unmet communications needs of 24 million hearing impaired individuals who are unable to access the telephone system that the rest of our nation uses daily.

In recent years, advances in technology have resulted in the development of TDDs—telecommunication devices for the deaf. These devices use keyboards and digital display screens to type and transmit messages over standard telephone wires. Unfortunately, however, communication is limited to a small number of individuals who own or have access to a TDD. As a result, a majority of businesses and government agencies are not accessible to the hearing impaired.

Section 504 of the Rehabilitation Act of 1973 mandates that disabled people be provided access to the same rights, privileges and services as non-disabled people. Having access to a telephone system is not only a right, but is crucial to obtaining medical, fire, police and other emergency services, as well as safety, employment, independent living and general information.

S. 2221 would require the FCC to consult and coordinate with the Architectural and Transportation Barriers Compliance Board to establish and implement a telecommunications system for the hearing-impaired with and within the Federal Government. In addition, all Federal departments and agencies will be required to be equipped with an accessible TDD. These measures are long overdue.

The legislation which we are discussing today does not address all of the communications needs of the hearing impaired. But it is a start toward recognition that the world of the deaf does not need to be a separate world. We have an obligation—a responsibility—to insure that every individual has equal opportunity in the work force and in every aspect of life which is touched by the telephone. As a cosponsor of this bill, I am confident that the testimony presented today will solidify our belief in the need for this important legislation.

OPENING STATEMENT BY SENATOR PACKWOOD

I'm pleased that the subcommitte is holding this hearing on S. 2221. I am an original cosponsor of this bill and think it deserves the Committee's serious consideration.

Senator McCain's bill is an important step in ensuring that this country's hearing impaired have access to our telephone system. Telephone service has become a mainstay of our society, and the needs of the hearing impaired must not be overlooked.

While telephone service for the hearing impaired was originally restricted for technological reasons, this is no longer the case. We should use our technological advances to ensure all segments of society have access to a telecommunications system. It is particularly important to a democratic system that access to the Government is not restricted. All citizens of this country should be able to communicate freely with the Federal Government.

This bill addresses these problems by implementing a relay system to enable the hearing impaired to communicate with federal agencies, and equipping federal departments with telecommunications devices for the deaf, or facilities to accommodate portable TDDs.

I commend the Senator from Arizona, Mr. McCain, for introducing this bill and bringing it before the Committee. I hope we can move it through the Congress expeditiously.

100TH CONGRESS
2D SESSION

S. 2221

To expand our national telecommunications system for the benefit of the hearing-impaired, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 29 (legislative day, MARCH 21), 1988

Mr. MCCAIN (for himself, Mr. HOLLINGS, Mr. DANFORTH, Mr. INOUYE, and Mr. PACKWOOD) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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A BILL

To expand our national telecommunications system for the benefit of the hearing-impaired, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

PURPOSE

SECTION 1. It is the purpose of this Act to—

(1) implement a telecommunications relay system to serve the needs of the hearing-impaired for access to Federal departments and agencies;

(2) equip all Federal departments and agencies with TDDs or facilities to accommodate portable TDDs, or both;

(3) provide for the assembly, publication, and maintenance of a TDD directory for Federal departments and agencies, and provide for publication of governmental TDD access numbers in other existing directories.

DEFINITIONS

SEC. 2. As used in this Act, the term—

(1) "TDD" means a Telecommunications Device for the Deaf, a machine which employs graphic communications through the transmission of coded signals across the standard telecommunications network (telephone); and

(2) "Federal departments and agencies" means each department, agency, or other entity of the United States.

FINDINGS

SEC. 3. The Congress finds that—

(1) nationwide communications are essential to the effective and efficient management of the country's affairs;

(2) under the Communications Act of 1934, the Federal Communications Commission was created "[f]or the purpose of regulating interstate . . . commerce in communication by wire . . . so as to make available, so far as possible, to all the people of the United States a rapid, efficient, nationwide . . .

wire . . . communication service with adequate facilities . . .";

(3) one percent of the population of the United States suffers from some type of hearing impairment that precludes their use of the nationwide telecommunications system currently accessible to the nonimpaired population;

(4) the inability of these citizens to access the nationwide telecommunications system available to all other citizens has a detrimental effect on the interstate commerce system;

(5) the technology exists to provide access to the nationwide telecommunications system for the many citizens currently denied access;

(6) the existing TDD relay system is insufficient to handle the communications needs of the hearing-impaired, and the incidence of TDDs in Federal departments and agencies is nearly nonexistent; and

(7) in the interest of fulfilling the mandate of the Communications Act of 1934, the Congress must enact legislation specifically addressing the needs of the hearing-impaired and extend to them the provisions of such Act.

REGULATION; PROGRAM

SEC. 4. (a) The Federal Communications Commission, in consultation and coordination with the Architectural and

Transportation Barriers Compliance Board, shall, by regulation, take such action as may be necessary to establish and implement a telecommunications system for the hearing-impaired with and within the Federal Government that serves as an interface between TDD users and Federal departments and agencies.

(b) In carrying out the provisions of subsection (a), the Commission shall—

(1) provide for the continuation and expansion of the existing relay system to a minimum service level to be established in accordance with subsection (a):

(2) assure the accessibility of TDDs in Federal departments and agencies under the following guidelines:

(A) providing a desk with a standard telephone and electrical outlet for access by TDD users with portable TDDs;

(B) an accessible TDD shall be provided in any Federal department or agency with a permanent or transient population of greater than 3,000 per working day;

(C) an accessible TDD station equipped with a TDD shall be provided in any Federal department or agency with a permanent or transient

population of greater than 10,000 per working day;

(D) flexibility and latitude to such facilities to upgrade and expand services as usage requires; and

(E) where economically feasible, installation of a pay phone station accessible by privately owned TDDs at locations visible from the main entrance or lobby of each facility;

(3) assemble, publish, and maintain a TDD directory for Federal departments and agencies, and publish, in existing directories, Federal governmental TDD access numbers;

(4) initiate or adopt the design of a standard logo in two forms, one signifying the presence of a TDD-equipped station and another signifying the presence of a TDD accessible station, and require such logos to be placed in the main entrance or lobby of each facility containing such a station;

(5) support the development of technologies designed to reduce the cost of TDD telecommunications with and within the Federal Government; and

(6) plan for the evolution of a hardware-based alternative to a Federal relay system.

AUTHORIZATIONS

SEC. 5. There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act.

○

Senator INOUYE. I would like to assure all of those here this morning that the absence of members does not indicate lack of interest.

This morning, as we find in the middle months of each year, is a very busy one, with hearings being conducted, incidentally, this morning with 15 committees and markups by four.

And all of our members have other responsibilities. So they are at other hearings. They will be coming in and out of this one.

So I can assure you that this committee is fully supportive of Senator McCain's efforts.

Before proceeding, for the record I would like to present to you: the two signers, Jan Nishimura and Amy Withrow; an oralist, Bernadine Olson, and Jaime Coronado, also an oralist.

Our first witness this morning is the vice chairman of the Architectural and Transportation Barriers Compliance Board of Washington, D.C., Mr. Tom Harvey.

STATEMENT OF THOMAS E. HARVEY, VICE CHAIRMAN, U.S. ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD; ACCOMPANIED BY TOM DENISTON, ACTING EXECUTIVE DIRECTOR; AND DENISE GAGNON, SIGN LANGUAGE INTERPRETER

Mr. HARVEY. Good morning, Mr. Chairman. Thank you very much for the opportunity to appear before the subcommittee this morning to testify on this very important legislation.

My name is Tom Harvey. I am vice chairman of the Architectural and Transportation Barriers Compliance Board. Unfortunately, that name is not a felicitous one that slips easily from the tongue. Surely we should find a better abbreviation for that.

I am also the Deputy Administrator of the Veterans Administration. The Veterans Administration by statute is a member of the ATBCB and I was, until the last meeting, the Chairman of the Board. By statute, the chairmanship rotates between Federal members and public sector members each year.

I am accompanied this morning by Mr. Tom Deniston, the Acting Executive Director of the Board, and Ms. Denise Gagnon. Denise has just recently left the employment of the board to go to work for the Selective Service. She has worked as a sign language interpreter for the board and for our members and staff that are hearing impaired. Also with me is Mr. Jim McCarthy.

I had hoped that one of the board members, Mr. Howard Adams, would be able to testify for you this morning. Howard is a city councilman in Phoenix, Arizona. He is a quadriplegic. He is a very valued member of the board and a very active one and I know, Senator McCain, he is a very good friend of yours.

I am sorry that Howard could not be here, but because of the deliberations on the city council budget there he is not able to be with us.

I was pleased to be invited some time ago to comment on Senator McCain's proposed S. 2221, and I submitted a statement at that time to him, which I would like if I may, Senator, to have entered into the record.

Senator INOUYE. Without objection, so ordered.

Mr. HARVEY. The Architectural and Transportation Barrers Compliance Board has been involved with the issue of accessibility for the hearing impaired since 1984, when we funded a research study which noted that there is a negative synergy which constitutes a major barrier to achievement of the effective TDD telecommunications access.

There is a wholly realistic lack of an expectation by TDD users that they can effectively penetrate Federal offices by phone to achieve communications. The study also concluded in the report that Federal employees using TDD's in their jobs face the same principal barrier as deaf citizens wishing to telecommunicate with their government: the absence of any mechanism for receiving TDD calls.

In 1985, the following year, the board approved a pilot project which we entered into with the Department of the Treasury in early 1986. That pilot project provides for the Treasury Department to operate a TDD relay which enables people to contact through that switchboard various Federal agencies.

What we have found to date is that we have approximately 537 calls a month going through that switchboard. The average length of those calls is about seven minutes. Ninety-nine agencies have used the facilities of that switchboard, and that does include some Congressional offices which have had occasion to contact constituents who are in need of that type of assistance.

In addition, the Architectural and Transportation Barriers Compliance Board is pursuing the development of TDD access facilities, again on a pilot project basis, at the Baltimore-Washington International Airport and in Miami, Florida, airports.

The intention of this is to bring the deaf community into the traveling public.

Unfortunately, because of construction projects going on at each of those airports, those really have not gotten as far as we would have hoped.

The legislation that is currently pending before the subcommittee, Mr. Chairman, does address a real need, and we look forward to working with the subcommittee to refine that legislation to meet that need most effectively.

For example, I think perhaps it would be worth considering transferring jurisdiction over this particular project to the General Services Administration, since GSA has jurisdiction over telecommunications devices in the Federal government generally.

That is a detail that we would be happy to work with you on.

Another detail that I think is important—and this is one that was brought painfully to my attention this morning as I was rereading two technical assistance bulletins of the Architectural and Transportation Barrier Compliance Board, which I would also like to submit to you for the record.[1]

The board recently moved, and in conjunction with that move all of our telephone numbers have been changed. And so these two very fine pamphlets that we distribute are very informative, but they are out of date because of that move.

And I think that one of the things as we deal with the realities of this legislation is going to be the issue of how do we keep information current, because if an agency moves, you can leave a telephone number behind and all of a sudden it will have effectively been lost to the consumer of your services.

So those are just some of the real world practical problems that we are going to have to deal with. And we do look forward to working with the subcommittee as you refine the legislation.

Thank you, Senator McCain, for introducing that. And Senator Inouye, thank you very much for chairing this important hearing.

Senator INOUYE. Thank you very much, Mr. Harvey. Your documents will be made a part of the record by reference.

In his prepared testimony, Mr. Gary Olson of the National Association for the Deaf, says that calls that go through the Congressional TDD relay office are retained and filed. Is that correct?

Mr. HARVEY. I have not had an opportunity, Mr. Chairman, to read the prepared testimony that the other witnesses will be submitting.

I am not aware of that. TDD's operate in a number of different ways. Some of them do have a hard printout of the messages that are sent over those. Many do not. Many just have a display screen and there is no permanent record to retain.

I certainly see no reason to retain a permanent record, just as you and I do not retain a verbatim record of all of the phone calls we may have to each other or to our constituents.

Senator INOUYE. If these calls are recorded, retained, and filed, I would like to know why and who has access to those files.

Mr. HARVEY. I am unaware of that and I cannot answer that for you, Senator.

Senator INOUYE. Based on your board's experimental system, do you have any changes to recommend to this bill?

Mr. HARVEY. Principally the one that I would think is worth considering is transferring jurisdiction from the Federal Communications Commission to the General Services Administration. That is because every Federal agency acquires their telecommunications equipment through GSA. GSA is very much involved in that, and I just think that as a practical matter that would be the way to deal with that.

It is something that we can live with should that not happen, but I think that might be easier. That is the principal change that I would suggest.

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[1] The submissions were not reproducible.

And I also would suggest that the staff of the board be in communication with the staff of the subcommittee about some other fine-tuning.

Senator INOUYE. I thank you, sir.

Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman.

I have no questions, Mr. Harvey. I read your prepared testimony as well, and I would like to say that I am very appreciative of the kind of support you are lending to this legislation.

I think it is important that the Architectural and Transportation Barriers Compliance Board be fully supportive, and I thank you for a very significant contribution.

Thank you.

Mr. HARVEY. Thank you, Senator.

I think it is important that we on the board take as broad a view of accessibility issues as we can. You know, what we sometimes think is that we have made, you and I as mobile people, we think that we have made a workplace or an area accessible by merely putting in a ramp that would enable a wheelchair to get in.

Well, if the workplace then does not have the appropriate technology in it, does not have other facilities that people with a variety of different handicaps may have, we might as well have just forgotten that initial step towards accessibility.

I think the legislation that you propose really does provide something very significant to a very significant number of highly competent, well educated contributing members of our society.

We want to make the workplace totally accessible so that everyone, whatever their disability, whatever their handicap, is a fully functional member of that work place.

Senator MCCAIN. Well said.

[The statement follows:]

STATEMENT OF THOMAS E. HARVEY, CHAIR, UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD

I recall my father telling me that in order to do a good job you need the right tools. During my tenure as Chair of the United States Architectural and Transportation Barriers Compliance Board it became clear to me that, in the work place, the primary difference between handicapped and non-handicapped employees, was not in their ability, but in the tools they need to get the job done.

We have for too long deprived ourselves of the talents and industry of our handicapped citizens simply because we have not provided them with the proper tools.

In the 1978 Amendment to the Rehabilitation Act, Congress made clear its intent that the elimination of communication barriers become part of the jurisdiction and authority of the Architectural and Transportation Barriers Compliance Board (ATBCB). Since that time, the ATBCB has been significantly involved in several projects beneficial to persons who are deaf or hearing-impaired. In 1984, the ATBCB conducted a survey which reflected a significant need for telecommunication access in the Federal Government and, as a result, in conjunction with the Department of Treasury, established the TDD (Telecommunication Device for Deaf persons) relay system. The TDD relay system is an interagency effort with the Department of Treasury, which provides a link between telephone users and speech or hearing-impaired users of telecommunications devices for deaf people. Highly successful, the relay currently handles an average of 537 calls a month and has served more than 99 Federal agencies.

The Senate Bill introduced by Senator McCain would serve to expand and make permanent the services of the existing TDD relay by equipping Federal departments and agencies with TDDs or with facilities to accommodate portable TDDs, or both, in order to meet the need for telecommunication access within the Federal Government.

The ATBCB and other agencies such as the General Services Administration would have to examine the particular costs, feasibility, administrative and related concerns raised by the bill before the Administration can take a formal position on it. From the perspective of ATBCB, however, and given our unique mission of improving accessibility, we believe Senator John McCain's bill to expand our national telecommunications system for the benefit of hearing-impaired people will provide more than twenty million citizens with a new tool to communicate with their Government. In addition, for the first time since 1934, the Government will take the lead in ensuring a rapid, efficient, nationwide telecommunications system available to all of our citizens. This bill not only provides a new tool, it is the right thing to do.

Federal TDD Relay Exchange Evaluation and Report

This demonstration project was designed and initiated to provide the Architectural and Transportation Barriers Compliance Board (ATBCB or Board) with information on the feasibility of providing telecommunications access to the federal government, via a TDD (telecommuncations devices for deaf persons) relay service operated within the government, for persons with disabilities which prevent their independent use of voice telecommunications equipment.

SUMMARY

The Federal TDD Relay Exchange began operation on August 18, 1986. To date, 18 months of data have been collected. A summary of this data reveals that 99 governmental (some DC and quasi federal) agencies and organizations have used or been contacted through the relay. Specifically 56 agencies have initiated and received calls and another 43 agencies have only received calls through the exchange service. These figures include all three branches of government. The average number of relayed calls per month is 537. The average length per call is seven minutes.

The money budgeted for the TDD Relay Exchange paid for the salary and benefits of one relay operator (for one year), two TDD machines (one for backup), one hard copy printer, and two telephone answering machines for each incoming line (one voice and one TDD). Training and publicity were provided by the ATBCB and were not part of the budget allocation for the project. Overhead costs, telephone line charges, desk space, etc. were paid for by Treasury.

Exact costs:

Salary and benefits of DS–5 Relay Operator	$15,343.00
Two TDD machines	578.00
Printer	488.40
Telephone answering machines	880.00

The relay is equipped to handle one incomeing call and "roll over" or hold another call until the line is free via a recorded message. The C&P Telephone Company has been conducting a monthly line usage survey to determine the call volume that receives hold messages and the number that receives busy signals when both lines are in use.

FINDINGS

A C&P telephone survey has concluded that current line capacity is sufficient for the volume of use. In addition, its survey revealed that heaviest call patterns occurred between 9–10 a.m. and again between 2–3 p.m. with only an occasional call receiving a busy signal instead of the "please hold" message. The line receiving the most busy signals or the hold message is the incoming TDD (566–2673) number.

The 18-month sample does not reveal dramatic growth patterns, but does demonstrate a constant and steady use. The data collected does not lend itself easily to a concise analysis for several reasons. First, the data is not computerized and must be hand-tallied, making analysis time consuming and labor intensive. Second, it is impossible to determine if any personnel levels and shifts and/or agency activities accouut for increases and decreases in use. And third, seasonal events could be contributing factors but can not be confirmed. For example the height of the summer holiday concludes at the beginning of the year-end cycles, and the data does reveal a sharp rise in the use during September and October with a decline thereafter. However other rises and drops cannot be explained but could be attributed to the end of

the Legislative session, significant agency events, such as rulemaking, or holiday periods.

The data does demonstrate a wide usage across various government agencies throughout the year and shows little or no correlation between those agencies traditionally considered as dealing with disability issues (such agencies generally have direct TDD access). The call volume and frequency validates the conclusion from an ATBCB-sponsored study that there existed a significant barrier to TDD communication with and within the federal government since it is probable that a significant number of the calls placed through the relay would not have been made without it.

In addition, the volume of calls placed and received has had some specific effects on reducing barriers due to limited TDD access:

(1) One department in the Office of Personnel Management (OPM) attributes its installation of a direct-dial TDD line to the large number of TDD relayed calls it had received.

(2) One TDD user attributes a position upgrade and job change to the use and operation of the federal TDD relay, citing to her employer that telecommunications was no longer a barrier.

(3) The Federal Mine Safety and Health RSeview Commission after conducting a self-evaluation of the Commission's 504 regulation, satisfied its requirement for TDD access by publishing its telephone number along with the TDD relay number to denote accessibility.

Senator INOUYE. Senator Pressler.

Senator PRESSLER. I want to thank the witness and thank you, Mr. Chairman, and to congratulate Senator McCain on this piece of legislation. I wish to be added as a co-sponsor if I am not already.

Senator MCCAIN. Yes.

OPENING STATEMENT BY SENATOR PRESSLER

Senator PRESSLER. I think it is a very important piece of legislation.

I do have a statement for the record. I did have an earlier separate bill regarding the Hearing Aid Compatibility Act of 1988, on which, I understand, the report is being written and will soon be on the Senate floor.

But this is an additional step that is very necessary, and I am very proud to be a small part of it and support it, and I thank you very much.

Thank you, Mr. Chairman, for scheduling today's mark up on S. 2221. I have just a brief statement.

As this committee is aware, I sponsored another bill designed to improve the access of hearing-impaired individuals to the telecommunications network, S. 52, the Hearing Aid Compatibility Act of 1988, which was favorably reported last month by this committee. In the course of working on that legislation, I developed a greater appreciation for the difficulties encountered by hearing-impaired person in conducting what the rest of us regard as normal telephone communications.

Therefore I have a great interest in the legislation before us today. The existing federal TDD relay system has certainly been of significant benefit to its users. I am looking forward to hearing the details of the proposed expansion of this system. In particular, I want to know to what degree this bill would affect hearing-impaired persons throughout the country, especially in smaller towns and rural areas.

Of course the issue of cost is always with us these days, and I hope we will also be able to hear some evidence today on the cost of this legislation. Again, Mr. Chairman, I thank you for holding

this hearing on another important communication concern, and I look forward to the testimony of today's witnesses on the need for this legislation.

Senator INOUYE. Our next witness unfortunately is not with us. She is still flying—oh, no. Is she here? I got a message saying that she was still flying.

Our next witness is the Deputy Chairman of the New York Public Service Commission, Commissioner Gail Garfield Schwartz. Welcome.

STATEMENT OF GAIL GARFIELD SCHWARTZ, DEPUTY CHAIRMAN, NEW YORK PUBLIC SERVICE COMMISSION

Ms. SCHWARTZ. Thank you, Senator.

Modern transportation is amazing and there was no traffic jam, so I got here very quickly. And I am very delighted to have the opportunity to testify before this distinguished committee on this very, very important matter.

I am here today on behalf of the National Association of Regulatory Utility Commissioners, which as you know is the professional association representing state and Federal regulators. My position as Deputy Chairman of the New York State Public Service Commission is, today, ancillary.

It is a great privilege to be allowed to speak on this subject that has the potential to change so many people's lives and to open up the world of telecommunications to those to whom access has been too restricted for too long.

Although of course it is my intent today to address S. 2221, I will use my comments on the bill only as a prologue to a discussion of what I believe will accomplish the intent of the bill, as well as meet the larger need of TDD users.

I am aware of the pilot program implemented last June, which established a Federal relay system to serve as an interface between TDD users and Federal offices. I commend the action of those who realize that deaf and hearing impaired people needed, required, and, most importantly, were entitled to access to the Federal government.

And it is clear that the access created thus far is inadequate, and I support the expansion of the Federal relay service.

However, in my opinion I think we would be shortsighted if we limit our goal to Federal government access only. Such access would not give the deaf, hearing, and speech impaired—that is, all TDD users—the use of an entire telecommunications network that the non-TDD user population enjoys.

And so I must conclude that what needs to be done is the creation of an interstate relay system, which would give TDD users access to the full range of telecommunications services.

And by that of course, we mean not only voice, which this immediate provision would provide for, but essentially data as well. An interstate system can begin to assure TDD users that a telecommunications network is being created for them as comparable as possible to that utilized by the non-impaired population.

And I think I can speak with some confidence about the feasibility of doing this, since in New York we have created a statewide

relay system which will be operational at the beginning of next year. And it permits communication throughout the state between TDD's and voice telephones.

In April 1987, we adopted a new rule which would make all telephone corporations responsible for ensuring the provision of a statewide relay system. There are several standards to that rule.

Is this my time buzzer, Senator?

Senator INOUYE. No, not at all.

Ms. SCHWARTZ. Thank you.

And they are all listed in my written testimony, so I will not go through them all in the interest of time. But I would like to highlight a couple of them.

First of all, the relay system should be operated by one entity with experience in telecommunications. Obviously, it should operate all day long.

The service parameters for the system should track the parameters of the existing telephone network as closely as is reasonably possible.

The costs of this system should be treated as normal operating expenses to the local exchange carriers and allocated on a prorated basis among them.

Certain conditions as to the charges of calls are required, and advisory boards composed of representatives from the various interested parties seem to be an asset.

The problem that we have, Senators, is that when we adopted this we had hopes of making this a hook-in to an interstate system. And now I think I will just depart from my written comments to summarize the problem.

AT&T was the only company to offer to operate the system which we determined should be provided by a single entity, and so it was given the responsibility to do so.

However, because one of the standards that I discussed, the interstate system has not yet been feasible because it requires FCC action. It seems to me that the most important thing at this time, especially in the context of all the other communications goals which the FCC, the states and the Congress are jointly pursuing is that the Congress consider ways to encourage or, if necessary, to mandate an interstate relay system.

The California experience and the soon-to-happen New York experience certainly prove that there are plenty of users out there who will become more productive members of society if they have this access. I think that in the larger community, no one questions the need to have telecommunications systems available to everybody in order to be economically productive.

Not to have a fully operational interstate system is really to keep the deaf and hearing and speech impaired out of the mainstream of economic life. So I would hope that you will view the Federal system as merely the first step towards a larger system that will be accomplished as soon as it is possible.

Thank you very much for the opportunity to testify.

Senator INOUYE. Thank you very much, Ms. Schwartz.

Other than the present hurdle of the FCC, what other obstacles do we have to implementing the interstate system?

Ms. SCHWARTZ. Well, as any new venture does, Senator, it took a little while to get the act together. Some of the users had different views abut what their needs would be. Some of the companies had differing views from the Commission as to how the costs should be measured and allocated.

I think it is safe to say that technological problems were not the main barriers. They were more institutional problems.

I think they are all solved now, and I think the experience that we had in going through this process could possibly be useful to others. Of course, taking off my NARUC cap for just a moment, I would be very happy to make our New York staff available to consult with anybody, your staffs or OGS or DFC or whoever is appropriate to try to pinpoint those possible barriers in advance and discuss how to get around them.

Senator INOUYE. How much did it cost the State of New York to implement this plan?

Ms. SCHWARTZ. That is a question I would like to reply to in writing if I may. I do not have that figure at my fingertips unless it is in this written testimony and I have overlooked it.

Whatever the number is, Senator, it is trivial compared to the benefits that are gained. I think that is the standard by which we should measure.

I believe that the program you contemplate is something like a $3 million program just for the Federal Government. So that does not strike me as very large to hook up all the Federal Government.

I will be very happy to supply the estimated cost.

Senator INOUYE. Is that all it costs in New York?

Ms. SCHWARTZ. I cannot say, Senator. I am sorry. I do not have those numbers. I do not believe they are even fully calculated at this point, but I will be happy to supply them immediately, as soon as possible.

Senator INOUYE. Thank you very much.

Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman.

I am not in disagreement, Ms. Schwartz, with your testimony, and I am very appreciative of it. I think you are aware that around here sometimes we have to go one step at a time. I am afraid that if we expand this present legislation in the fashion that we say we will, it might impede this first step from being implemented.

Clearly, we have not fully addressed, even if we did what you are advocating, the needs of the communications for the hearing impaired. Senator Pressler's legislation is part of the effort that we are making as well.

If we, as you advocate, have Congress mandate an interstate relay system, how would you envision this system being implemented? Would it be a private or public entity? Would it be government procurement? Would we let out bids for who would provide this service? How would you envision that to take place?

Ms. SCHWARTZ. Well, Senator, I guess I would always start first with appeals to the interstate carriers to do this on a voluntary basis.

I suggest mandates only as something that you would have hanging out there in the wings as your club, but I believe that the inter-

state carriers would see the advantage to them of providing this system.

Within New York State, AT&T is taking pride in and is claiming responsibility for having been bold in working with us to implement this system. Possibly, that is the major point that I can make, that companies have a big public relations interest in doing this. Of course, AT&T is the dominant carrier, but the other interexchange carriers conceivably would also join in on a voluntary basis.

Of course, they will argue that their costs are excessive and that therefore they should be allowed some extra earnings. But we have a golden opportunity to do this now because we are considering major new ways of regulating those companies.

So if we are going to do that, let us try to get everything from them that we can at one time. So my suggestion would be to first just sit down at the table and start talking to them about what it would take and how to do it and what they think it would cost and then check the numbers very carefully.

Senator MCCAIN. Thank you. I think you have made some very important recommendations here. Thank you, Ms. Schwartz.

Ms. SCHWARTZ. Thank you, Senator.

Senator INOUYE. Senator Pressler?

Senator PRESSLER. We welcome you here.

Perhaps you could just deal with this series of questions. You have covered some of them already. I certainly like the idea of eliminating the middlemen in the future.

How soon do you think we can move to a system of direct communications using personal computers and do away with the relay system, or will we ever be able to eliminate a relay system, considering that many people may not be able to afford personal computers?

Ms. SCHWARTZ. Taking the last point first, the economics are more my bag than the technology. I am an economist, not an engineer, so I would be stepping outside the bounds of my knowledge if I commented on the technical hookups.

But if the only barrier is the cost of computers, I am confident that fairly soon we will be able to supply almost everybody with a usable computer to hook up to data bases and to voice relay systems. I think it is really a matter of only a very few years.

For those whose income is so low that they cannot afford it, then we can take the same approach that we have taken in New York State and many other states to guarantee a piece of terminal equipment as part of universal service. This is not something that anyone has yet proposed as law or policy in the commission, but it is certainly not beyond the realm of possibility if the cost is low enough; or we could provide income assistance programs that allow people to purchase computers.

So I do not see that as an insurmountable barrier. But as to the economics of the technology, I would have to decline to comment on that because I really do not know.

Senator PRESSLER. Thank you very much.

Ms. SCHWARTZ. Thank you, Senator.

[The statement and questions and answers follow:]

STATEMENT OF GAIL GARFIELD SCHWARTZ, DEPUTY CHAIRMAN, NEW YORK STATE PUBLIC SERVICE COMMISSION

Good morning, ladies and gentlemen. My name is Gail Garfield Schwartz. I am here today on behalf of the National Association of Regulatory Utility Commissioners (NARUC) as well as my position as Deputy Chairman, of the New York State Public Service Commission. It is a privilege to be testifying before the Communications Subcommittee on a subject that has the potential to change so many peoples' lives and to open up the world of telecommunications to those whose access has been too restricted for too long.

It is my intent today to address S. 2221, legislation to implement a telecommunications relay system to serve the needs of the deaf and hearing impaired for access to federal departments and agencies, to equip all federal departments and agencies with Telecommunication Devices for the Deaf (TDDs) or facilities to accommodate portable TDDs or both, and to provide for a TDD directory for the federal government and for publication of governmental TDD access numbers in other existing directories. However, it will only serve as a prologue to a discussion of what I believe will accomplish the intent of this bill as well as meet the larger need of TDD users.

I am aware of the pilot program implemented last June which established a federal relay service to serve as an interface between TDD users and federal offices. I commend the action of those who realized that deaf and hearing impaired people needed, required, and very importantly, were entitled to access to the federal government. It is clear that the access created thus far is inadequate, and I support expansion of the federal relay service.

However, in my opinion we are being shortsighted if we limit our goal to federal government access only. Such access would not give the deaf, hearing and speech impaired, in other words all TDD users, the use of the telecommunications network that the non-TDD user population enjoys.

I must, therefore, conclude that what needs to be done is the creation of an interstate relay system which would give TDD users access to the full range of telecommunications services. An interstate system can begin to assure TDD users that a telecommunications network is being created for them as comparable as possible to that utilized by the non-impaired population.

I can endorse and recommend an interstate relay system concept because I can speak with confidence and pride of the New York Commission's actions to create a statewide relay system, which will enable communications between TDDs and voice telephones. On April 27, 1987, the Commission unanimously adopted a new rule which would make all telephone corporations responsible for insuring the provision of a statewide relay system. The Commission required that the relay system be operational by January 1, 1989, and that it incorporate specific operational standards.

The standards are:

(1) The relay system should be operated by one entity with experience in telecommunications.

(2) The system should operate 24 hours a day and offer intrastate and interstate communications provided that either the calling or called party is located in New York. (This standard appears unenforceable at this time but I will return to this later.)

(3) The service parameters for the relay system should track the parameters of the existing telephone network as closely as reasonably achievable.

Other requirements specified by the Commission are:

(1) The cost of the system, including a return on investment, should be treated as normal operating expenses to the Local Exchange Carriers (LECs) and allocated among them based on the ratio of each company's number of access lines to total statewide access lines.

(2) Charges for calls should be calculated from point of origination to point of termination and be independent of the call's actual routing.

(3) An advisory board, comprised of representatives from the operating entity, major telephone companies, staff, and members of the hearing and speech impaired communities should be established to provide guidance in such areas as operator training, problem solving, and future enhancements.

(4) The local exchange carriers should file annually an operations report and a simplified financial report.

(5) Information about the relay system should be included in all local telephone directories and also in a bill insert at least once a year.

When the Commission adopted the rules requring the relay system, it also directed the LECs to submit an agreed-upon design and plan for implementation of a statewide relay system. The provision of the relay system was open to any qualified

company. However, because AT&T had expressed an interest in operating the system, and in fact was the only party to do so, the Commission directed the LECs to meet and discuss the system with AT&T.

On May 6, 1988, the Commission approved, with some minor modifications, the contract submitted by AT&T to operate a relay system in New York. We remain confident that the system will be operational by January 1, 1989.

All of the Commission's efforts in New York have been guided by two main principles: that a relay system is part of the basic service obligation of local phone companies and that telephone service should be comparable to that provided to the hearing community. Because of those beliefs it is disappointing that one of the standards I previously discussed is proving to be an obstacle, i.e. the ability to complete interstate calls.

A system that only permits intrastate calls, or for that matter a system that only permits access to federal departments and agencies, is an incomplete one. I would therefore urge you to consider ways to encourage an interstate relay system. The California experience and the soon to happen New York experience prove that the need and desire for TDD users to communicate with the rest of the world is vast and unquenchable. I urge you to consider taking the next step that all hearing and speech impaired and deaf citizens deserve: a nationwide interstate relay system.

Before I conclude I will take off my NARUC hat so that I may offer the assistance of the New York Commission to share its innovative and creative methods and work with Congress and the FCC to develop and fund a nationwide relay system. With this partnership, we can develop real access to the telecommunications network for all hearing and speech impaired and deaf citizens.

Thank you.

Addendum to the Statement of Gail Garfield Schwartz

In response to questions and elaborating on my oral testimony of June 23, 1988, I submit the following addendum in a question and answer format.

Question. What is the estimated cost of the New York Statewide Relay System?

Answer. AT&T Communications of New York, Inc., the operating entity of the New York Statewide Relay System, has estimated the total charges to the $10.9 million the first year of operation. The costs include approximately $900,000 for leasing and maintaining the building, $6.4 million for labor and office expenses, and $2.3 million for network usage. Also included is a 6% profit margin on building costs, and an 18% profit margin on labor expenses.

Question. What are the numbers of deaf and hearing impaired people in New York State?

Answer. Concrete figures on the hearing impaired and deaf population of New York State do not exist. However, Gallaudet College, in Washington, DC, has done an estimate of those with hearing losses, based on a total general population figure from the census of April 1980, of the U.S. Bureau of the Census.

Total General	17,508,000
Hearing Impaired	1,046,000
Significant Bilateral Loss	446,000
Deaf	122,000
Prevocationally Deaf	30,000

The definitions of the categories are as follows: Hearing Impaired = any degree of hearing loss in one or both ears.

Significant Bilateral Loss = those hearing impaired who have substantial difficulty hearing in both ears.

Deaf = cannot hear and understand speech.

Prevocationally deaf = those who became deaf prior to 19 years of age.

Question. What is the estimated cost per subscriber of the New York Statewide Relay System?

Answer. The estimated cost per access line per month for the first year of operation is $0.092.

Question. What procedures did the New York State Public Service Commission utilize in developing the rules and negotiating the contract for a Statewide Relay System?

Answer. On March 16, 1984, Dr. Frances G. Berko, State Advocate for the Disabled, wrote the Commission and requested its assistance in developing a statewide telecommunications relay system for people who are speech or hearing-impaired.

In response to Dr. Berko's request, the Commission established Case 28966 and issued, on December 4, 1984, a notice soliciting comments from interested parties regarding the establishment and operation of a statewide telecommunications relay system.

Comments supporting such a system were received from 85 individuals or groups, and four telephone companies. All comments supported the establishment of a relay system. However, there was no agreement as to who should operate it, with the hearing and speech impaired community maintaining the telephone companies should operate the system, and the telephone companies contending it should be operated by government or non-profit organizations.

On October 6, 1986, the Commission issued a notice of proposed rulemaking to add a subdivision (c) to 16 NYCRR Section 603.2. As proposed, the section would require all telephone corporations to provide a system permitting telephone communications, on a 24-hour basis, between hearing and/or speech impaired individuals and those with normal hearing and speech.

The Commission requested comments on the proposed rule be submitted by November 14, 1986. Seventy-four responses were received from various entities including six telephone companies, two legislators and twenty-four organizations representing the hearing and/or speech impaired community. In addition, public statement hearings were held in Albany, New York City and Rochester on December 17, 1986, January 22, 1987, and January 29, 1987, respectively, at which 83 individuals made statements.

All Comments, written and oral, endorsed the concept of a statewide telephone relay system. The commentors expressed differences concerning how the system should be funded and who should be responsible for its operation. However, based on the comments received, the Commission concluded that the need for a statewide telephone relay system had been demonstrated. Additionally, while the local exchange companies did not express interest in operating the system, AT&T Communications of New York, Inc., (AT&T) submitted comments in which it stated that it would consider being the implementor of a relay system in New York.

On April 29, 1987, the Commission unanimously adopted a rule establishing a Statewide Relay System and requiring that it be operational by January 1, 1989. The specific standards adopted have already been presented in my oral testimony of June 23, 1988. All local exchange companies were directed to meet with AT&T, consult with one another and submit to the Commission an agreed upon plan and contract for implementation of a Relay System.

In response to the Commission's directive, representatives of AT&T, New York Telephone Company (NYT), Rochester Telephone Corporation (RTC), and the New York State Telephone Association met several times to discuss a proposal for the system submitted by AT&T. Members of staff attended subsequent meetings to provide their views about the degree of regulation of the relay system, the cost of the system, nature and level of return, and other topics. The discussions resulted in the negotiation and eventual consensus of the parties to a Statewide Relay System contract submitted for Commission approval in January, 1988.

On May 6, 1988, the Commission issued an order which approved the contract between the local exchange companies and AT&T, contingent upon some minor modifications. The contract has been signed by approximately half the local exchange companies and the others are expected to sign within the next several weeks.

Question. From the perspective of the New York Public Service Commission, what is the barrier to creating an interstate relay service?

Answer. As I previously stated, it was the Commission's intention that the Relay System provide for intrastate and interstate communication provided that either the calling or called party was located in New York. This qualification was to ensure that the telephone ratepayers of New York did not fund a system that would bypass a New York resident and benefit only out-of-State residents. Technically, the ability to accomodate interstate and intrastate communications does exist. It is billing and administrative obstacles which prevent our intention from becoming a reality. Mechanisms do not exist for the operating entity to bill a non-New York resident for use of our Relay System and for spreading the cost portions which must be subsidized in an equitable state-to-state manner. For example, it would be possible technically for a caller in Nebraska to use the relay system to call an individual in New York. However, the mechanisms are not in place for the AT&T relay center in New York to bill that call through the local exchange company in Nebraska.

Question. What actions can overcome the barrier to providing interstate communication?

Answer. The answer to this question will require much research and thought which others, besides the New York Commission, seek to acquire. The FCC, on

March 29, 1988, issued a Notice of Proposed Rulemaking and Further Notice of Inquiry (NOI). In the NOI, the FCC requests detailed proposals for an interstate relay system and notes that its ". . . ability to mandate an interstate TDD relay system and establish a funding mechanism for it appears to raise new and novel questions of law." Consequently, the FCC requests comments on its statutory authority to mandate and fund such a system and the New York Public Service Commission will be submitting comments in the proceeding and will be pleased to furnish a copy to the Subcommittee.

In view of the FCC's actions and action by others, such as NARUC, to consider proposed legislation for an interstate relay system, I would urge Congress and the FCC to work together and with other interested and qualified parties to consider ways to develop an interstate relay system. In working to develop an interstate system, based on our experience in New York, I suggest that the cooperation of the local companies and the interstate carriers is vital to the system's success and, that the hearing and speech impaired and deaf communities be a part of the planning and implementation process.

Question. Does the technology exist today to translate a TDD's written message to voice and vice versa?

Answer. Based on a presentation made to staff of New York State's Department of Public Service in November, 1987, by representatives of Bell Communications Research (Bellcore), the technology does exist. Bellcore has developed a research vehicle called DEAFNET which uses a central computer to place a call between a TDD and a regular telephone. Two way communications are performed by synthesizing text typed from the TDD to the earset of the telephone, and utilizing speech recognition to transpose text to the TDD from the mouthpiece of the telephone. In the case of the TDD user typing a message which is later relayed into speech by the computer, the only major problem appears to be the artificial sound of the synthesized speech. A non-TDD user has to be trained to respond back to the computer and the computer must be programmed to accept that person's voice patterns and understand his/her vocabulary. Therefore, this system would have its most useful application in the case of TDD users communicating with family members or very close friends who could be taught how to use this system (entering vocabulary into the computer, speaking clearly with a small delay between words, correcting errors).

For the TDD user who may make an occasional call to a store, doctor, or restaurant, the system has some distinct limitations. The hearing person whose voice patterns and vocabulary have not been programmed into the central computer's data base cannot "talk back" to the computer. Rather conversation originated by the TDD user must be in the form of questions requiring a yes or no response by the hearing person and the hearing person must be using a touch-tone type phone to have his/her response understood by the computer.

As previously mentioned, DEAFNET is a research vehicle used by Bellcore and not available for use by the public. In its research, Bellcore continues to examine various voice recognition systems and algorithms for better recognition rates, continuous speech, large vocabularies, and as the technologies develop, independent speaker recognition. In terms of technology and economics, it appears that it may be quite some time before a system such as DEAFNET can be considered to be on a par with a manned relay system.

It is also important to note here as part of its Further Notice of Inquiry previously discussed, the FCC has asked that proposals for an interstate relay system ". . . consider means of phasing in possible replacement of manned stations with unmanned facilities."

Senator INOUYE. Before proceeding, I would like to assure all witnesses that their prepared statements will be made part of the record in total.

Our next witness is the man of the hour, the President of Gallaudet University, Dr. I. King Jordan.

Dr. Jordan, it is a great pleasure and honor to welcome you, sir.

STATEMENT OF DR. I. KING JORDAN, PRESIDENT, GALLAUDET UNIVERSITY

Dr. JORDAN. Thank you. I am delighted to be here.

Mr. Chairman, members of the committee, I am very honored to testify before you today on this very important bill. I testify to you

as a deaf person and as the President of Gallaudet University, therefore representing deaf individuals from preschool age through the Ph.D., faculty, staff members, alumni, and deaf community members from all over the Nation and the world.

Currently, the hearing impaired community has limited access to telephone networks throughout the country. While various States have begun to develop local telephone relay systems, these systems have typically been underfunded, understaffed and overutilized. Thus, they have been inadequate to meet the telecommunication needs of the hearing impaired individuals wishing to contact voice telephone users.

With respect to the Federal Government, poor telecommunication access for hearing impaired persons has caused frustration and the denial of equal rights of these individuals to use government services.

In order to rectify this situation, in 1986 the Architectural Transportation Barriers Compliance Board, the ATBCB, and the Department of the Treasury established a pilot relay system to expand TDD access to, from and within Federal agencies. Unfortunately, ATBCB's program has not been well advertised or well operated.

S. 2221 would offer a major start to resolving the problem of poor telephone access for hearing impaired individuals. This bill would thus expand access to government services and benefits and enhance the employment opportunities for all hearing impaired individuals throughout America.

At least, deaf individuals, individuals who pay Federal taxes as do all citizens, will be able to reap the benefits of services paid for by those taxes.

Moreover, a Federal relay system will enable and encourage Federal employers to expand job responsibilities for existing hearing impaired governmental employees. Job descriptions for those employed can now be modified to include responsibilities which require contact by telephone. Expansion of job opportunities in this way will hopefully lead to enhanced opportunities for promotion and advancement within the Federal Government for hearing impaired persons.

S. 2221 proposes that the Federal Communication Commission work with the ATBCB to develop such regulations as may be necessary to implement a Federal relay system. Given the urgent need for such a system and the many years it has taken to reach the day when this system will finally be established, we also urge that the Congress impose a time requirement for the promulgation of these FCC ATBCB regulations.

The need for expanded TDD access throughout the Federal Government is perhaps best shown by the inadequate access which is now afford to individuals wishing to contact the Social Security Administration. Currently, the SSA has one 800 number. That is the only number accessible to hearing impaired individuals. This number has proved to be insufficient.

Callers are often unable to get through to the SSA operators because there are simply not enough lines or enough operators to handle the large number of calls coming in to that 800 number. This means that Social Security beneficiaries are left without an

effective means of ascertaining information about their individual eligibility and benefits.

S. 2221 would require the maintenance of a TDD directory for Federal departments and agencies. I support the need for this TDD directory. A TDD directory would help to disseminate information about the Federal Government's TDD numbers. At a minimum, the directory should be updated annually, given the frequency with which Federal Government numbers change.

In addition to a Federal TDD directory, I strongly urge the FCC and the ATBCB to develop an ongoing computerized data base system within the Federal relay system. The data base would contain up-to-date information on changes in TDD telephone numbers throughout the Federal Government. With this data base, a TDD operator would have the means to quickly ascertain whether the TDD caller could be given a direct TDD number to the Federal office.

Finally, S. 2221 requires the FCC to plan for the evolution of a hard wire based alternative Federal relay system. Again, we support this provision of the bill. Technology in the area of telecommunications is expanding at a phenomenal rate. The doors to new technology that may assist hearing impaired individuals should remain open. We encourage the FCC and the ATBCB to explore new initiatives to serve as alternatives or supplements to the proposed Federal relay system.

My dream as a deaf individual and as President of Gallaudet University is for the Congress to require full access to the American telephone network. As Senator McCain noted in introducing S. 2221, Congress through the 1934 Communications Act mandated a rapid, efficient nationwide wire communication service with adequate facilities. My colleagues and I representing 24 million hearing impaired Americans do not have this access.

S. 2221 offers a hopeful beginning to finally achieving equal opportunity to telephone access. We urge you to take immediate action to secure passage of this legislation and to continue other legislative efforts to ultimately achieve full nationwide telephone network access to the 24 million Americans who are hearing impaired.

Thank you very much.

Senator INOUYE. Thank you very much, Dr. Jordan.

Am I correct to assume that you have a TDD system on your campus?

Dr. JORDAN. Oh, yes, sir.

Senator INOUYE. How many terminals do you have available to students and faculty? Do you have them in every classroom, in every office?

Dr. JORDAN. Virtually every office on campus has TDDs, and many offices have a number of TDDs. The number must exceed 400 or 500. We have a very, very large number of TDDs, yes, sir.

Senator INOUYE. When were these facilities placed on the campus?

Dr. JORDAN. The normal situation at Gallaudet University honestly is a TDD next to each telephone. It is the rare telephone at Gallaudet that does not have a companion TDD.

Senator INOUYE. Do you have any idea as to the cost involved?

Dr. JORDAN. The individual TDDs range in cost from about $125 to more than $500, depending on the variety of features that you want in them.

I personally use a very simple TDD that is portable and easy to use. It does not have a print record. But my office TDD is much more sophisticated and can hook up with the computer system.

Senator INOUYE. Your suggestions in your statement will be most helpful to the committee when we prepare this measure for consideration by the full committee.

I would like to assure you, because in your statement you suggested expeditious consideration, that as Chairman of this subcommittee we will have a markup within the month, and we hope to have this measure out on the floor, considered and passed before the fall.

Dr. JORDAN. On behalf of the deaf Americans, I thank you very much for that, sir.

Senator INOUYE. Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman.

Thank you, Doctor. We are honored by your presence here today.

I would like to explore a little more on this subject of the cost of TDD. Would it be reasonable to assume that if we significantly increased the demand for TDDs as a result of this legislation that the individual price per unit would go down? Is that a logical assumption?

Dr. JORDAN. I think that is a very logical assumption, yes, sir. One of the reasons for the high cost now is that there is simply not a large market demand.

Senator MCCAIN. So we could anticipate that $100 per unit would be reasonable to assume?

Dr. JORDAN. Very reasonable.

Senator MCCAIN. My colleague, Senator Pressler, addressed this question earlier. I would like for you to address it.

Do you think that personal computers will eventually replace TDDs?

Dr. JORDAN. I personally use both my personal computer and the TDD for phone communication. There is a sound system on many personal computers that works just like a TDD, but I am not sure it will ever completely replace it for the simple reason that many TDDs are very easily portable.

I carry my TDD when I travel and use it at the airport and at the hotel, and it would be very difficult to do that unless maybe a laptop computer could have the same capability.

It is difficult for me to guess whether that would happen.

Senator MCCAIN. Finally, is it true that the lack of these facilities within government offices has effectively prevented hearing impaired Americans from finding employment?

Dr. JORDAN. Oh, yes. They have prevented hearing impaired Americans from participating fully in the American government, yes, sir, they have.

Senator MCCAIN. If we had these TDDs available, this would enhance the likelihood of more employment for hearing impaired Americans; is that true?

Dr. JORDAN. Yes, it would. It would enhance the opportunity for more employment and for more advancement once entry into employment takes place.

Senator MCCAIN. Which, in my view, is an obligation, not just something we ought to do.

Dr. JORDAN. Thank you very much.

Senator MCCAIN. Thank you, Doctor.

Thank you very much.

Senator INOUYE. Senator Pressler.

Senator PRESSLER. I have no additional questions, but I want to congratulate you. I have seen you on TV, and I wish you very well. Each year I come over to your college and meet with any South Dakotans there. There are usually only two or three there because we are a small state, but I will be over again this year looking for some folks from South Dakota. So I look forward to seeing you.

Dr. JORDAN. Thank you very much.

Mr. Chairman, if I may say one more thing while I have the table, sir. In the fall Gallaudet University will sponsor a two-day symposium on relay systems, and that symposium will address all of the major issues related to the establishment and the conduction of a relay system and will look at the two countries in the world, Canada and Sweden, that are actually ahead of us in relay systems.

Perhaps by the fall with the passage of this bill we can begin our catching up.

Senator INOUYE. If I may, I would like to thank you for sharing with us a TDD in my office. I am looking forward to communicating with you over the TDD in the days to come. You may have to teach me how to use it.

Dr. JORDAN. I would be happy to do that.

Senator INOUYE. I thank you very much, Dr. Jordan. You have been extremely helpful. As I indicated, Senator McCain and I will do our best to make certain that this measure becomes law this year.

Dr. JORDAN. Thank you, sir.

[The statement follows:]

STATEMENT OF DR. I. KING JORDAN, PRESIDENT, GALLAUDET UNIVERSITY

Mr. Chairman, members of the Committee, thank you for the opportunity to testify before you. My name is I. King Jordan and I am the President of Gallaudet University. I am particulary pleased to testify before Senator Inouye, who is the Senate member of our Board of Trustees. I am here to testify in support of S. 2221, in two roles, one as a profoundly deaf individual and the other as President of Gallaudet University, the World's only four year liberal arts university for hearing impaired students. I am here today to speak on behalf of hearing impaired individuals ranging from very young pre-schoolers to Ph.D. candidates, Gallaudet alumni, faculty, and staff, and the deaf community at large.

Hearing impaired individuals use telecommunication devices for the deaf, or TDDs, to converse by telephone. In order for a TDD user to have a conversation with another party, the other party must also have a TDD, or the TDD user must be able to contact the other party through a telephone relay system. The telephone relay system enables the TDD user to communicate with a user of a voice telephone through a third person. The third person simultaneously transmits the telephone messages between the TDD user and the telephone user.

Currently, the hearing impaired community has limited access to telephone networks throughout the country. While various states have begun to develop local telephone relay systems, there systems have typically been underfunded, understaffed and overutilized. Thus, they have been inadequate to meet the telecommuni-

cation needs of hearing impaired individuals wishing to contact voice telephone numbers

With respect to the federal government, poor telecommunications access for hearing impaired persons has caused frustration and the denial of the equal rights of these individuals to use government services. In order to rectify this situation, in 1986, the Architectural Transportation Barriers Compliance Board (ATBCB) and the Department of Treasury established a pilot relay system to expand TDD access to, from, and within federal agencies. Unfortunately, ATBCB's program has not been well advertised or well operated. We have found that some deaf government employees are not aware of this service; others who do use this service are extremely disappointed and frustrated in their attempt to use it. The latter group complain of unanswered calls or mishandled relay calls. Moreover, the ATBCB's program is only a temporary one, without permanent funding. It is apparent that this present Federal relay is a bandaid approach to the existing problem.

S. 2221 would offer a major start to resolving the problem of poor telephone access for hearing impaired individuals. S. 2221 would require that both direct TDD access be provided to governmental services and indirect TDD access be provided through a relay system. This bill would thus expand access to governmental services and benefits, and enhance the employment opportunities for all hearing impaired individuals throughout America. At last, deaf individuals—individuals who pay Federal taxes as do all citizens—will be able to reap the benefits of services paid for with those taxes. These individuals would no longer have to depend on hearing family members, friends, or co-workers to make calls to the Federal government for them. Moreover, a Federal relay system would eliminate the need for hearing impaired persons to depend on overloaded local public and private telephone relay systems. Hopefully, these local systems would develop computerized database systems by which they could inform a TDD caller of either the Federal government relay of a TDD number of the specific Federal agency the caller is attempting to reach.

S. 2221 will enable hearing impaired Federal employees to reach other offices both within and outside of the Federal government. By expanding telephone access in this way, the bill would inevitably expand job opportunities for hearing impaired individuals. Suppose, for example, the government has an open position for an accountant who must make telephone calls on a regular basis to hearing individuals elsewhere in the government. Without a relay system, a potential employer may be reluctant to give this position to a hearing impaired employee, for fear that he or she might not be able to fulfill one of the essential functions of the job. With the relay, however, that hearing impaired applicant can be considered for the position on an equal basis with his or her hearing colleagues. No longer can that employer reject that applicant simply because he or she does not have access to hearing persons via the telephone.

Moreover, a Federal relay system will enable and encourage Federal employees to expand job responsibilities for existing hearing impaired governmental employees. Job descriptions for these employees can now be modified to include responsibilities which require contacts by telephone. Expansion of job duties in this way will hopefully lead to enhanced opportunities for promotions and advancement within the Federal government for hearing impaired persons.

S. 2221 proposes that the Federal Communications Commission (FCC) work with the ATBCB to develop such regulations as may be necessary to implement the federal relay system. We urge the FCC to work closely with the ATBCB to implement an effective, efficient and well-publicized relay system. Given the urgent need for such a system, and the many years it has taken to reach the day when this system will finally be established, we also urge that Congress impose a time requirement for the promulgation of these FCC/ATBCB regulations. I am aware and remind this committee that the FCC currently has a similar proceeding pending, in which the Commission is seeking proposals to establish a nationwide interstate telecommunications relay system. Notice of Proposed Rulemaking and Further Notice of Inquiry, Docket No. 87-124 (released March 29, 1988). That FCC Proceeding was prompted by the failure of many existing relay services (such as that which now exists in California) to handle interstate calls. Hopefully, the FCC will find some of the comments received in this ongoing proceeding to be of value in developing regulations to implement S. 2221.

Many of the provisions of S. 2221 would reinforce and supplement Sections 501 and 504 of the Rehabilitation Act of 1973. These laws require Federal agencies which communicate with applicants, beneficiaries, and members of the public by telephone to be accessible to hearing impaired persons through TDDs. The placement of one or more TDD accessible numbers in all Federal departments would finally provide a specific means for enforcing these laws. For similar reasons, I ap-

plaud those requirements of the proposed bill which would provide both TDD equipped and TDD accessible stations within Federal buildings. It is about time that hearing impaired individuals be given the same opportunities to make calls from Federal buildings as are currently available to hearing persons. Even that portion of the bill which requires the provision of desks (or shelves) on which to put privately owned TDDs would be most helpful. Often, making phone calls has involved a balancing act on our part. I refer to the awkward situation of having to balance our TDD with one hand and type with our other hand at a public telephone booth. A convenient place to put our TDDs would certainly make what should be this simplest of tasks a great deal easier.

The need for expanded TDD access throughout the Federal government is perhaps best shown by the inadequate access which is now afforded to individuals wishing to contact the Social Security Administration (SSA). Currently, the SSA has one 800 number accessible to hearing impaired Americans. This number has proved to be insufficient for a number of reasons. To begin with, the number is understaffed. Callers are often unable to get through to SSA operators because there simply are not enough lines or operators to handle the large volume of calls coming into the 800 number. Other deaf individuals have informed me that setting up appointments with their local SSA offices through the 800 TDD number takes an inordinate amoung of time. The SSA operator must call the local SSA office, set up the appointment, and call the deaf person again about the appointment. It is glaringly clear that the 800 TDD number is better suited for the purpose of asking general questions related to SSA benefit entitlement programs, rather than for calling local SSA offices. This means that Social Security beneficiaries are virtually left without an effective means of ascertaining information about their individual eligibility and benefits. Currently, the National Association of the Deaf Legal Defense Fund, with the support of Gallaudet's National Center for Law and the Deaf (NCLD) is engaged in a legal proceeding with the SSA on this very issue. The NCLD has served a large number of SSA clients in its 13 year existence. A good majority of these clients have complained of the difficulties they have had trying to obtain TDD telephone access to SSA offices.

On a local level, the Fort Lincoln Bladensburg Road Social Security Office, because of its proximity to Gallaudet, handles a large caseload of deaf students receiving SSI benefits. Yet, the Bladensburg office does not have a TDD number or device with which to accept or make TDD calls. The result is that Gallaudet students are left without a means to contact this Social Security office by telephone.

Hearing impaired individuals fare even worse with other Federal agencies, such as the Immigration and Naturalization Service. It is my understanding that several agencies do not have any accessible TDD numbers whatsoever. Often hearing impaired persons seeking information about programs administered and conducted by these agencies have had to incur high legal expenses charged by attorneys simply to find out their basic rights under these programs.

S. 2221 would require the maintenance of a TDD director for Federal departments and agencies. I wholeheartedly endorse the need for this TDD directory. A TDD directory would help to disseminate information about the Federal government's TDD numbers. At a minimum, the directory should be updated annually, given the frequency with which Federal telephone numbers can change. I suggest that, in preparing the directory, the FCC and the ATBCB work closely with established consumer organizations of hearing impaired individuals, such as the National Association of the Deaf (NAD), Telecommunications for the Deaf, Inc. (TDI), and the Alexander Graham Bell Association (AGB). These organizations have access to groups back home that have had experience in publishing local TDD directories. Moreover, TDI publishes an annual directory of TDD numbers on a national basis.

In addition to a Federal TDD directory, I strongly urge the FCC and the ATBCB to develop an ongoing computerized database within the Federal relay system. The database would contain up-to-date information on changes in TDD telephone numbers throughout the Federal government. With this database, a TDD operator would have the means to quickly ascertain whether the TDD caller can be given a direct TDD number to the Federal office that the caller is wishing to contact. Of course, if there is no direct line to that office, the caller would be able to complete his or her call through the Federal relay service. The need for a database of this kind is highlighted by the repeated insistence of telephone companies that they have not been able to make electronic recordings of new or changed listings available for TDD users.

The proposed legislation suggests the adoption of two standard logos—one to signify the presence of a TDD-equipped telephone station and the other to signify the presence of a TDD accessible telephone station. I offer two suggestions in this

regard: First, rather than have the ATBCB and FCC expend a portion of the relay funds to develop the logos, I suggest leaving this to TDI, which will be sponsoring an international logo contest during the 1989 Deaf Way Conference. The Deaf Way Conference is the first of its kind. It is scheduled to take place in July of 1989, at Gallaudet University. The Conference will bring together deaf people from all over the world to share their sign languages, culture, history and art.

With respect to the logo for a TDD-accessible telephone booth, I suggest using the already accepted symbol of deafness, i.e., a drawing of an ear with a slash through it. Placement of this logo on public pay phones would signify to deaf individuals that these telephones are accessible for their TDDs. My colleagues from the NAD, TDI, and AGB agree with me that creating a new logo may result in a waste of time and money. Our reason for advocating the use of the existing symbol of the ear is simple: This logo is well-known among the deaf community. Were a new symbol developed, the new symbol might confuse deaf TDD users.

Finally, S. 2221 requires the FCC to plan for the evolution of a hardware-based alternative to a Federal relay system. Again, we support this provision of the bill. Technology in the area of telecommunications is expanding at a phenomenal rate. The doors to new technology that may assist hearing impaired individuals should remain open. Indeed, at least one company has already researched, and is in the process of developing, an automated telecommunication relay service. In that service, a central computer would receive a TDD call and proceed to dial another party that did not have a TDD. The computer, through speech synthesization, would voice the TDD transmission to the non-TDD user and relay the voice responses to the TDD caller via TDD. Unfortunately, it is expected this system will not be available for general use for a few years.

A second system—developed by a different telephone manufacturer—allows individuals with computers to converse in writing with other individuals who have touch tone telephones, eliminating completely the need for a TDD at either end of the telephone conversation. Individuals with the touch tone telephones use a code, together with the numbers and letters already on those telephones, to type out their conversations. In addition to these two developments, there may be other systems under consideration by telephone manufacturers and service providers to expand telecommunication services for hearing impaired persons. We encourage the FCC and ATBCB to explore these initiatives to serve as alternatives or supplements to the proposed Federal relay system.

My dream as a deaf individual and President of Gallaudet University is for the Congress to require full access to the American telephone network. As Senator McCain noted in introducing S. 2221, Congress, through the 1934 Communications Act, mandated "a rapid, efficient, nationwide . . . wire . . . communication service with adequate facilities." My colleagues and I represent 24 million hearing impaired Americans who do not have this access. S. 2221 offers a hopeful beginning to finally achieving equal telephone access. We urge you to take immediate action to secure passage of this legislation, and to continue other legislative efforts to ultimately achieve full nationwide telephone network access for the 24 million Americans who are hearing impaired.

Senator INOUYE. Our next witness is the President of the National Association of the Deaf, Mr. Gary Olsen.

STATEMENT OF GARY OLSEN, PRESIDENT, NATIONAL ASSOCIATION OF THE DEAF (AS INTERPRETED BY JAN NISHIMURA)

Mr. OLSEN. Good morning and thank you for giving me this opportunity to be here and sit before you on telecommunications, on the Communications Subcommittee of the Committee on Commerce, Science, and Transportation.

I would like to thank you for this opportunity to appear before you to discuss S. 2221.

The NAD is 108 years old, and we are an organization which advocates for the rights of deaf and hard of hearing individuals within the United States.

The NAD was established on the principle that deaf people have both the right and the responsibility to determine their own desti-

nies and to have a full part in the American decisionmaking process which affects their lives.

I face you here today because of an irony. As we all know, the telephone was invented by Alexander Graham Bell. It has become a tool of necessity that links us near and far. Not every one of us realizes, however, that Bell was working on the creation of a device that would help his deaf wife hear better.

He blew it, so to speak, in a way, as the device has been a hindrance for deaf and hard of hearing people. But, with new technology, we have been better able to harness that.

Regardless, since the inception of mass telephone use, communication among people has skyrocketed beyond belief.

As a paragon of equal employment opportunity, the Federal Government must pave the way for equal telecommunication access for their employees and would-be employees who use TDDs. Hearing impairment is the second most common disability among Federal Government employees. Failure to provide equal telecommunication access to those employees hinders their professional continuation and growth.

The guidelines pertaining to the assurance of the accessibility of TDDs in Federal departments and agencies lack clarity. The need for TDD accessibility must be determined not by agency or department population, but, rather, by the population in Federally owned and leased spaces.

We endorse the intent of this passage; but we see the need for definitive language, perhaps in the regulations.

In determining the logo, for example, I would like to bring to your attention an event that Gallaudet University will be hosting on July 9 through 14, 1989, called "The Deaf Way," which will be an international festival and conference on the language, culture, and history of deaf people.

There will be a contest to determine a standard, worldwide logo for the TDD. I strongly recommend that the logo chosen be used by the Federal Government.

We strongly support the development of technologies designed to reduce the cost of TDD telecommunications with and within the Federal Government. It must be emphasized that any changes in the TDD telecommunication process with and within the Federal Government due to technological development shall uphold the quality of the existing system.

The National Association of the Deaf, with a membership of 20,000 strong, applauds the Senate's proclivity in this matter. In this new age of deaf awareness, it is only fitting that this legislative body move to the forefront in recognizing the rights of disabled people.

The language and intent of S. 2221 is most proper. Working together, we can make it ideal.

This brings me to several points on this legislation which I would like to bring to your attention.

Number one is that every personnel office should have a TDD. Currently, a TDD user interested in employment with the Federal Government has to go through the Office of Personnel Management, OPM. TDD users should be able to place a call directly to a

specific personnel office after their applications are processed by the OPM, just like any other American.

Secondly, every Senator and Representative needs to have a TDD accessible number at their home offices. TDD users back home should not have to make long distance calls to the Congressional TDD relay service if they can place a local call within their Congressional district.

Thirdly, upgrading TDD accessibility in the Federal Government is not going to be an easy task. To insure that the efficiency of this program is maintained at an ideal standard, a full-time employee is needed to give attention solely to this. It is strongly suggested that whoever is chosen already be familiar with TDDs and similar equipment, and also be fluent in sign language, so as to be able to effectively communicate with the end users of this product.

The term "TDD," as defined in the legislation, needs to be clarified to insure compatibility with both the Baudot and the ASCII technology, and that would be the fourth point; that is, that the term "TDD," as defined, needs to be clarified to insure compatibility with both Baudot and ASCII, as I have indicated before.

In closing, let me emphasize again that we commend the Congress for taking action to make themselves and other areas of the United States Government more accessible to deaf people. We also commend this Subcommittee's empathy, not sympathy, that has produced this legislation.

Every morning, across this great country of ours, there are deaf children who pledge their allegiance to the flag in Sign Language. That pledge ends on the note that in this country there is "justice for all."

I ask for a speedy passage of S. 2221, so that justice can be served and those children will be able to exercise their inherent rights under the flag to which they pledge their allegiance.

Thank you.

Senator INOUYE. Thank you very much, Mr. Olsen.

As the clock will indicate, there is a vote pending at this moment, and so, if I may, I would like to call a short recess.

We should be back in about 12 minutes.

[Brief recess.]

Senator INOUYE. Mr. Olsen, may I request that you or your staff avail yourselves to members of the Committee staff or the staff of Senator McCain to work over details. We would like to expedite the passage of this measure.

And so, if you could make yourself available, we would appreciate it very much.

Mr. OLSEN. Yes, sir, we will make ourselves available and our staff as well with regard to this. We are very committed to this.

Senator INOUYE. I would like to ask a question which is not directly involved in S. 2221, but as the head of the National Association, you may have the answer.

Is there any employment service for the deaf or the hearing impaired?

Mr. OLSEN. What kind of employment services are you referring to—on the state level or on the local level? Training? There are various kinds.

Senator INOUYE. What if my office wanted to hire a hearing impaired person? Where do I go?

Mr. OLSEN. Well, in that case, it is scattered all over the country.

For example, you might find some graduates of a university or college who would go to a Federally supported program, like Gallaudet University, NTID, CSUN, California State University at Northridge, or other post-secondary programs, Seattle Community College, for example, and others.

On the state level, you could probably contact the deaf services agencies and state-wide services programs, like state agencies who are affiliated with the NAD.

We have a network in 50 states, and you can contact those people and I am sure that, through them, you can get some help.

For a long time, a lot of those resources have been at the schools for the deaf within each state. In Hawaii, for example, we have a Hawaiian service agency association for the deaf, which is the Aloha State Association for the Deaf, which is affiliated with us, and they have a volunteer program where they help refer people to find jobs and to help those employers who are seeking employees.

Senator INOUYE. Mr. Olsen, as to your logo, may I assure you, as one Member of the Senate, I will insist that the logo be developed by the deaf or the hearing impaired. I am certain you people have the best ideas for what the logo should look like.

Mr. OLSEN. Yes.

Senator INOUYE. May I now call upon the author of the measure, Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman.

Mr. Chairman, I would like to have the written testimony of Mr. Paul Singleton, who is with the National Association of the Deaf TDD Relay Task Force included in the record.

Senator INOUYE. Without objection, it is so ordered.

Senator MCCAIN. Thank you, Mr. Chairman.

Also, I would like to mention to Mr. Olsen that I often hear a good phrase, and, if you don't mind, I would like to steal yours, about the Pledge of Allegiance that deaf children throughout America should have justice for all. I think your testimony is very eloquent.

Senator Inouye and I were discussing the fact that one of the steps that we can take right away is to make sure that our other colleagues here in the Senate and in the House all have TDDs in their offices. Senator DeConcini, Senator Inouye, and I have those in our offices, and we will try to make sure that every Congressional office has at least a TDD to provide the kind of access which is necessary for the taxpayers to have to their elected representatives.

I want to ask just one more question.

Mr. OLSEN. Thank you for that.

Senator MCCAIN. I am concerned, again, about the development of technology. It is a little bit repetitious, but with your background, I think you could tell us.

Do you think that technology will somehow supersede the requirement for TDDs?

Mr. OLSEN. Probably down the road, yes. But it is important here that we emphasize that we focus in on the new developments, such

as you heard recently mentioned, the question about the computer doing TDD operations. I strongly believe that down the line that will happen.

But the current TTYs need to be updated. The important part is that we have to take care that the equipment be compatible with the current systems and devices, because there are a lot of deaf Americans who have invested a lot of money in this equipment, in the TDD equipment, and it would be ridiculous for us to come up with higher technology and technological equipment and put them into operation when that new technology is not compatible with the devices which deaf people currently have.

We would like technology that would allow for both, ASCII and Baudot, and that should be able to function. This is an important element for you to consider when you look at the equipment. That's fine. It is important to look at what can be done to facilitate communication between the taxpayers and by the policy decision makers.

Senator MCCAIN. Thank you.

Thank you, Mr. Chairman.

Senator INOUYE. Thank you very much, Mr. Olsen. We look forward to working with you.

Mr. OLSEN. Me, too.

Senator INOUYE. Our next witness represents the Alexander Graham Bell Society of Washington, Mr. Michael Janger.

Mr. Janger, welcome, sir.

STATEMENT OF MICHAEL JANGER, ALEXANDER GRAHAM BELL ASSOCIATION FOR THE DEAF

Mr. JANGER. I'm Michael Janger, a third-year student from Brown University who is majoring in political science.

I'm spending the summer as a legislative intern for the Alexander Graham Bell Association for the Deaf, an organization that has as one of its goals helping hearing impaired children develop spoken communication.

I am one of these children. I was born with a severe congenital hearing impairment. Because of this handicap, I cannot use the phone. I rely on TDDs and other available systems for communication over the phone. This has severely limited my ability to use the American telecommunications system to carry out tasks that may be considered mundane by the average American.

The Bell Association strongly supports the bill requiring all Federal departments and agencies to be equipped with TDDs and serviced by a permanent relay system. This bill, if passed, will be a giant step for us, the hearing impaired people.

More than ever before, with increased access, we would be able to exercise the basic American right of voicing our needs, interests and concerns to the Federal Government.

A very small number of Federal employees own TDDs, mostly for personal reasons, and, as Senator McCain has said, the existing Federal relay system is operated by only one person and about to be taken down shortly.

The government cannot afford to restrict the ability of 24 million hearing impaired Americans, 2 million of whom are severely hearing impaired, to express themselves.

If this bill is passed, it will not only preserve existing communication systems that connect hearing impaired persons with the Federal Government, but also provide critically needed expansion of these systems.

I am all for anything that enables the hearing impaired population to utilize the existing American telecommunications systems in more ways than ever before. However, in the interest of helping develop the most effective legislation possible, I would like to raise the following questions.

As I understand it, there is a provision in the bill for a desk with a standard telephone for access by portable TTY users. However, there are thousands of desks in each Federal department and agency, most of them equipped with standard telephones. It seems to me that a TTY user could simply ask the nearest person if he could use the person's phone.

Second, this bill insures that there will be 3,000 to 10,000 Federal employees for every TDD. While this figure is far lower than the present ratio, it is still far higher than the national average of 2,400 Americans for every TDD. I believe that the bill should provide additional access, if at all possible. The ideal would be giving the hearing impaired population as much equal access to the Federal Government as the rest of the American people. Therefore, we suggest that the minimum population requirements be lowered to a level below the national average and the number of TDDs be increased. These adjustments should not be too costly.

TDDs are inexpensive, costing between $150 to $250 per TDD.

Thirdly, the bill provides for the installation of a pay phone station accessible by portable TDD users in economically feasible Federal locations. I would like more clarification on this point.

The pay phones across the Nation and at Federal locations do accommodate portable TDDs. How different will a TDD accessible pay phone station be from a regular pay phone station?

If these three issues can be addressed, then I believe that this bill will go a very long way in realizing the goal of a Federal Government that is totally accessible to hearing impaired Americans. This does not mean that the Bell Association opposes the bill in its present form. If passed in its present form, it will greatly improve the way hearing impaired citizens communicate with the Federal Government.

However, a few additional steps would enhance the bill. The technology is there, and has been for quite some time. And TDDs are relatively inexpensive and are highly compatible with standard phones. Some steps can be taken now, at little expense and with minimum interference with normal government business.

Hearing impaired people have waited far too long for access to government information on an equal basis with normally hearing people.

Thank you for giving me the chance to speak. And, more importantly, on behalf of the Bell Association, thank you for your interest in helping hearing impaired people.

I would be pleased to answer any questions.

Senator INOUYE. Thank you very much, Mr. Janger, for your very important testimony, important because you have focused upon a matter which is rather common among all of us as we draft legislation.

This measure before us was, for the most part, developed and drafted by men and women who are not deaf and who are not hearing impaired. As a result, much as we want to be sensitive to your concerns and needs, it is not possible for us to place ourselves in your shoes.

As a result, we are asking all of you to join us in this endeavor, as I have asked other witnesses to avail themselves to our Committee staffs and to the staff of Senator McCain, so that we can come forth with a measure that will be, in essence, drafted and developed by the deaf and the hearing impaired.

So, if you could make yourself available, in behalf of the Committee we will be most grateful, sir.

Mr. JANGER. Yes, sir.

Senator INOUYE. Senator McCain.

Senator MCCAIN. Thank you, Mr. Chairman.

I also, Mr. Janger, would like to thank you for your valuable comments and also your three concerns. I hope that we will be able to address them in a manner which is satisfactory.

I think you raise some very legitimate concerns and I hope that we can incorporate your concerns into this legislation.

I just have one additional question that is probably very elementary. Are pay phones TDD compatible?

Mr. JANGER. Would you please repeat that? I'm sorry.

Senator MCCAIN. Are pay phones compatible for TDDs?

Mr. JANGER. Yes, they are compatible with TDDs because most of the phones have circular earpieces and mouthpieces. The TDD's have suction cups that can accommodate these phones fairly easily. I have used TDD's on some pay phones in New York, Chicago, and San Francisco, and have encountered no problems with that.

But I would suggest that a TDD accessible station would not be that much different from a regular pay phone station except that the handsets be amplified so that hearing impaired people will be able to understand what is going on on the other side.

[The following information was subsequently received for the record:]

ALEXANDER GRAHAM BELL
ASSOCIATION FOR THE DEAF, INC.,
Washington, D.C., June 24, 1988.

Hon. ERNEST F. HOLLINGS,
U.S. Senate, Washington, DC.

DEAR SENATOR HOLLINGS: I would like to rectify a statement that I made during my June 23rd testimony before the Committee on Commerce, Science, and Transportation on Senate Bill Number 2221, the bill that expands the Federal Government's telecommunications system for the benefit of the hearing-imparied.

You may recall that I questioned the effectiveness of Section 4(b)(2)(E) of S. 2221, namely the provision of a TDD-accessible pay phone station in economically feasible Federal locations. I made this statement basically on the fact that regular pay phones employ a standard AT&T handset with a circular mouthpiece and earpiece that are highly compatible with TDDs. I never took into account other factors that require the design and development of a TDD-accessible pay phone station. Moreover, I almost never used pay phones during my lifetime.

After my testimony, I talked with some members of the audience at the June 23rd hearing. Based on my conversations, I am convinced that the installation of TDD-

accessible pay phone stations in Federal locations is absolutely necessary. Regular pay phones have short cords which make it difficult for hearing-imparied people like me to hold TDDs. Also, most pay phone stations do not have tables or shelves wide enough for TDDs. We have to hold the TDDs, and at the same time type on the TDDs themselves. Finally, the AT&T breakup has spurred development of handsets with different designs. Such handsets are difficult to fit into contemporary TDDs.

I, on behalf of the Bell Association, truly believe that S. 2221 is an extremely important step in the continuing efforts to obtain equal rights for the hearing-impaired. I heartily support the bill and look forward to its passage.

Best wishes to you for the summer. In my role as a summer legislative intern, I found the opportunity to testify before you most interesting and rewarding.

Sincerely,

MICHAEL C. JANGER,
Legislative Intern.

Senator MCCAIN. Thank you.

Thank you, Mr. Chairman.

Senator INOUYE. Thank you very much, Mr. Janger.

Our final witness is the executive director of the Telecommunications for the Deaf, Inc., Mr. Alfred Sonnenstrahl, and Mr. Sonnenstrahl will be accompanied by Mr. Paul Taylor from the National Technical Institute for the Deaf.

Welcome, Mr. Sonnenstrahl. Please proceed.

STATEMENT OF ALFRED SONNENSTRAHL, EXECUTIVE DIRECTOR, TELECOMMUNICATIONS FOR THE DEAF, INC., AS INTERPRETED BY JAN NISHIMURA; ACCOMPANIED BY PAUL L. TAYLOR, CHAIRPERSON, TELEPHONE RELAY COMMITTEE AS INTERPRETED BY JAN NISHIMURA

Mr. SONNENSTRAHL. I have been profoundly deaf since birth, and I have experienced a lot of the frustrations of being a deaf person. I welcome this opportunity to appear before you and to testify on S. 2221 making Federal departments and agencies accessible to the millions of hearing impaired citizens in the United States.

As Mr. Olsen mentioned recently, Mr. Alexander Graham Bell was working on a hearing aid when he accidentally created the telephone. His invention backfired, and it created a situation which could have been labeled as "the communication ghetto".

There are over 20 million hearing impaired citizens in the United States, and that includes at least 7 million who have hearing losses which are profound. These people must rely on TDDs to communicate by telephone. These citizens are severely restricted in their freedom to make phone calls.

Because the other party must have a TDD, our office is overwhelmed. We are inundated daily with many phone calls, many requests asking for assistance to individual agencies. For example, your letter which invited us to come before you to testify on behalf of S. 2221 listed two phone numbers which were indicated as being help numbers, but those two numbers were inaccessible.

Today, I just received a listing of phone numbers, TDD numbers within the Senate offices, and 16 percent of the Senators, and I understand, Mr. Chair, that you have just received a TDD so I can add your name to that list, and that makes it 16.5 percent of the Senate offices which are now accessible with TDDs.

Last year an Internal Revenue Service agent, so to speak, or so he portrayed himself, approached some deaf individuals demanding their prior tax payment. These hearing impaired individuals had

no way of calling the office to verify if those demands were valid from that agent. So as a result, they made their payments, and these agents, as we found out later, were con men.

As Mr. Harvey mentioned in his testimony, there is a serious problem in keeping TDD numbers. Twenty years ago TDI was established to keep track of all TDDs which had been distributed. Today, we have more manufacturers, more producers, more TDDs than there previously were. So we have our own directory, and we keep trying to keep track of all the TDD numbers. Believe me, that is not easy to do, to keep track of all those numbers. We appreciate your helping us and keeping track of those TDD numbers.

I would like to emphasize something. There are some things in your bill—not only is it a humanitarian obligation but it also is a vital part of deaf civil rights, the deaf civil rights movement. It can also be extremely cost effective. This could result in a more efficient use of interpreters, hearing impaired workers and hearing impaired co-workers.

Hearing co-workers are often asked or called away from their jobs to make phone calls on behalf of the hearing impaired workers. There tends to be an inconsistent approach while making phone calls. As you know, consistency through a relay system can result in greater productivity for all individuals involved, for all individuals concerned.

It also can provide the deaf individual more opportunity in getting more information, and that would mean less need for retraining programs.

Care should be taken while setting up a new system such as the one proposed. I have outlined some issues which I strongly believe need to be taken into consideration, the first of which is that qualified deaf people or hearing impaired people be involved in the decisionmaking process from the beginning.

Second, that standards be developed based on position papers which are gathered by the consumers, the deaf community. I have added those position papers in Addendum A.

There should be no restrictions as to the length of the phone calls. There should also be no restrictions on the number of phone calls made. There should be no charge for phone call relay service, and there should be at least a blockage rate of 80 percent.

The qualifications of the operators must be taken into consideration. These individuals should have a typing speed of 60 words per minute; should have a basic understanding of American sign language structure and a basic reading rate; and they should have a professional manner very similar to the code of ethics which has been established by the RID, the Registry of Interpreters for the Deaf. That code of ethics I have also added on Addendum B. This code of ethics includes confidentiality and mannerisms.

There should be no censoring of communication except for those that involve threatening issues.

Top management positions within this program should include a knowledge and understanding of deafness and sign language skills and also telecommunication issues relating to the TDDs and to intervoice usage.

I thank you for giving me this opportunity to come before you today and, more importantly, I applaud and I commend you for rec-

ognizing the serious defect in the way the Federal Government fails to serve the millions of their constituents. I thank you for taking the time to remedy this serious situation.

I would like to introduce Mr. Paul Taylor, who is the Chairperson of the National Phone Relay Service System who is from Rochester.

Mr. TAYLOR.

[The statement follows:]

POSITION PAPER ON FEDERAL TELEPHONE RELAY SYSTEM COMPILED BY TELECOMMUNICATIONS FOR THE DEAF, INC.

1. There should be no restrictions on length of any call initiated through the program, as it takes more time to deliver a typed message than by voice.
2. There should be no restrictions on the number of calls initiated through the program. Everyone, including hearing people, should enjoy the freedom to make phone calls as often as they find it necessary to do so.
3. There should be a centralized, nation-wide, toll-free number (800) where all TDD users can have direct access to the program.
4. The program hours should coincide with the hours that the Federal departments and agencies are available to the public.
5. The system should be a dual party relay system. Both voice and TDD callers should be able to initiate calls to the other.
6. There should be no charge for the relay program. All users of the program should pay for the calls they initiate from their telephone to the receiving party.
7. There should be reasonable availability of the relay program by the relay service provider at the blockage rate of 80% by both TDD and non-TDD users.
8. Emergency calls made through the relay program are not encouraged. It is the responsibility of the 911 service providers to be accessible by TDDs.
9. The functions of the relay program would be limited to dual party message relay provision, and not any other functions, i.e.: information and referral.
10. The qualifications of the operators should include the following:
a. Typing skills of 60 wpm;
b. Acceptable reading skills;
c. Basic understanding of American Sign Language structure; and
d. Professional manner that will comply with the principles of ethical behavior, similar to Registry of Interpreters for the Deaf, Inc.'s Code of Ethics. (Addendum B) This will serve to protect and guide personnel when questions arise regarding ethical behavior in specific situations.
11. The dual party relay system should have no paper TDD models or any methods of recording conversations to ensure confidentiality and freedom of speech.
12. There should be no censoring of any conversations. The only operator-initiated interruptions allowed would be for calls involving life or death matters, or obscenities directed towards the operators themselves.
13. Top management positions in the program should include the knowledge and understanding of deafness, American Sign Language, and telecommunication issues related to TDD and voice usage.

CODE OF ETHICS OF THE REGISTRY OF INTERPRETERS FOR THE DEAF, INC.

The Registry of Interpreters for the Deaf, Inc. refers to individuals who may perform one or more of the following services:

INTERPRET

Spoken English to American Sign Language.
American Sign Language to Spoken English.

TRANSLITERATE

Spoken English to Manually Coded English/Pidgin Sign English.
Manually Coded English/Pidgin Sign English to Spoken English.
Spoken English to Paraphrased Non-audible Spoken English.

GESTICULATE/MIME, ETC.

Spoken English to Gesture, Mime, etc.

Gesture, Mime, etc. to Spoken English.

The Registry of Interpreters for the Deaf, Inc. has set forth the following principles of ethical behavior to protect and guide the interpreter/transliterator, the consumers (hearing and hearing impaired) and the profession, as well as to insure for all, the right to communicate.

This Code of Ethics applies to all members of the Registry of Interpreters for the Deaf, Inc. and all certified non-members.

While these are general guidelines to govern the performance of the interpreter/transliterator generally, it is recognized that there are ever increasing numbers of highly specialized situations that demand specific explanation. It is envisioned that the R.I.D., Inc. will issue appropriate guidelines.

Interpreter/Transliterator Shall Keep All Assignment-Related Information Strictly Confidential.

Guidelines: Interpreter/transliterators shall not reveal information about any assignment, including the fact that the service is being performed.

Even seemingly unimportant information could be damaging in the wrong hands. Therefore, to avoid this possibility, interpreter/transliterators must not say anything about any assignment. In cases where meetings or information becomes a matter of public record, the interpreter/transliterator shall use discretion in discussing such meetings or information.

If a problem arises between the interpreter/transliterator and either person involved in an assignment, the interpreter/transliterator should first discuss it with the person involved. If no solution can be reached then both should agree on a third person who could advise them.

When training new trainees by the method of sharing actual experiences, the trainers shall not reveal any of the following information: Name, sex, age, etc. of the consumer day of the week, time of the day, time of the year, the situation took place; location, including city, state or agency other people involved; unnecessary specifics about the situation.

It only takes a minimum amount of information to identify the parties involved.

Interpreter/Transliterators Shall Render the Message Faithfully, Always Conveying the Content and Spirit of the Speaker. Using Language Most Readily Understood by the Person(s) Whom They Serve.

Guidelines: Interpreter/transliterators are not editors and must transmit everything that is said in exactly the same way it was intended. This is especially difficult when the interpreter disagrees with what is being said or feels uncomfortable when profanity is being used. Interpreter/transliterators must remember that they are not at all responsible for what is said, only for conveying it accurately. If the interpreter/transliterator's own feelings interfere with rendering the message accurately, he/she shall withdraw from the situation.

While working from Spoken English to Sign or Non-audible Spoken English, the interpreter/transliterator should communicate in the manner most easily understood or preferred by the deaf or hard of hearing person(s), be it American Sign Language, Manually Coded English, fingerspelling, paraphrasing in Non-audible Spoken English, gesturing, drawing, or writing, etc. It is important for the interpreter/transliterator and deaf or hard of hearing person(s) to spend some time adjusting to each other's way of communicating prior to the actual assignment. When working from Sign or Non-audible Spoken English, the interpreter/transliterator shall speak the language used by the hearing person in spoken form, be it English, Spanish, French, etc.

Interpreter/Transliterator Shall Not Counsel, Advise, or Interject Personal Opinions.

Guidelines: Just as interpreter/transliterators may not omit anything which is said, they may not add anything to the situation, even when they are asked to do so by other parties involved.

An interpreter/transliterator is only present in a given situation because two or more people have difficulty communicating, and thus the interpreter/transliterator's only function is to facilitate communication. He/she shall not become personally involved because in so doing he/she accepts some responsibility for the outcome, which does not rightly belong to the interpreter/transliterator.

Interpreter/Transliterators Shall Accept Assignments Using Discretion With Regard To Skill, Setting, and the Consumers Involved.

Guidelines: Interpreter/transliterators shall only accept assignments for which they are qualified. However, when an interpreter/transliterator shortage exists and the only available interpreter/transliterator does not possess the necessary skill for a particular assignment, this situation should be explained to the consumer. If the consumers agree that services are needed regardless of skill level, then the available

interpreter/transliterator will have to use his/her best judgment about accepting or rejecting the assignment.

Certain situations may prove uncomfortable for some interpreter/transliterators and clients. Religious, political, racial, or sexual difference, etc. can adversely affect the facilitating task. Therefore, an interpreter/transliterator shall not accept assignments which he/she knows will involve such situations.

Interpreter/transliterators shall generally refrain from providing services in situations where family members, or close personal or professional relationships may affect impartiality, since it is difficult to mask inner feelings. Under these circumstances, especially in legal settings, the ability to prove oneself unbiased when challenged is lessened. In emergency situations, it is realized that the interpreter/transliterator may have to provide services for family members, friends, or close business associates. However, all parties should be informed that the interpreter/transliterator may not become personally involved in the proceedings.

Interpreter/Transliterators Shall Request Compensation for Services in a Professional and Judicious Manner.

Guidelines: Interpreter/transliterators shall be knowledgeable about fees which are appropriate to the profession, and be informed about the current suggested fee schedule of the national organization. A sliding scale of hourly and daily rates has been established for interpreter/transliterators in many areas. To determine the appropriate fee, interpreter/transliterators should know their own level of skill, level of certification, length of experience, nature of the assignment, and the local cost of living index.

There are circumstances when it is appropriate for interpreter/transliterators to provide services without charge. This should be done with discretion, taking care to preserve the self-respect of the consumers. Consumers should not feel that they are recipients of charity. When providing gratis services, care should be taken so that the livelihood of other interpreter/transliterators will be protected. A free-lance interpreter/transliterator may depend on this work for a living and therefore must charge for services rendered, while persons with other full-time work may perform the service as a favor without feeling a loss of income.

Interpreter/Transliterators Shall Function in a Manner Appropriate to the Situation.

Guidelines: Interpreter/transliterators shall conduct themselves in such a manner that brings respect to themselves, the consumers and the national organization. The term "appropriate manner" refers to:

(a) dressing in a manner that is appropriate for skin tone and is not distracting.

(b) conducting oneself in all phases of an assignment in a manner befitting a professional.

Interpreter/Transliterators Shall Strive to Further Knowledge and Skills Through Participation in Workshops, Professional Meetings, Interaction with Professional Colleagues and Reading of Current Literature in the Field.

Interpreter/Transliterators, by Virtue of Membership in or Certification by the R.I.D., Inc., shall Strive to Maintain High Professional Standards in Compliance With the Code of Ethics.

Mr. TAYLOR. Mr. Senator, Mr. Chairman, members of the committee, it gives me great pleasure to speak before you and to preset you with some examples in support of S. 2221.

Americans place 1.1 billion telephone calls every day, which amounts to five calls per day for each man, woman and child over the age of five. On the average, Americans use the phone ten times daily unless they are hearing impaired.

An efficient telephone relay service in the Federal Government will enable thousands of hearing impaired Federal employees to make telephone contacts easily and effortlessly. It can be expected that because of the increased communications capability, the hearing impaired employee will experience increased job opportunities and responsibilities.

Additionally, such increased responsibilities may lead to higher GS levels and person income from which increased taxes may help recover relay service expenses.

I would like to add an example to my statement which is not in the prepared testimony. For example, we have 100 hearing impaired people within the Federal Government who can be promoted to the next higher GS level. So from my calculations, I would say 100 people times $1,000 for each GS level times 35 percent which we can figure at the tax base would result in a 35 percent increase, 35 percent tax base. So we would get perhaps $130,000 which could be added to the Federal Government coffers each year in taxes.

Now, if there are a few hidden Dr. King Jordans within this pool, if they are found within the government, then perhaps the Federal relay service would not only pay for itself but it would also help reduce the Federal deficit.

The Federal Government has always set outstanding examples and precedent for State governments and the private sector. By observing the relay service in action and its resultant benefits, it will only be a matter of time before millions of hearing impaired Americans will add to the 1.1 billion telephone calls daily and live a full and independent lifestyle undreamed of even at this present day.

Honorable Senators, I encourage and implore all of you to support this very important bill which will set an outstanding example of providing full telephone accessibility for millions of Americans.

Thank you.

Senator INOUYE. Thank you both very much.

Mr. Sonnenstrahl, the first example that you presented to us setting forth the difficulty in communicating with this committee is, as you have indicated, a disgrace and an embarrassment. I can assure you that we will have TDD-accessible telephones installed within the month so that the next time you communicate with this committee, you will be able to do so by a TDD-accessible telephone.

Secondly, your research has indicated that there are 16 offices with TDDs. Senator McCain and I will make it a project to see that by the end of this year every Senate office will be TDD accessible.

I would like to call upon the author of this measure now.

Senator MCCAIN. Thank you, Mr. Chairman. We will also try to prevail on our colleagues on the other side of the Hill, although sometimes that does more harm than good. We will try to see if they can understand the requirement that you have so graphically demonstrated.

It is nice to see you again, Mr. Taylor. Thank you for being here.

I have no questions, but I would like to thank all of the witnesses and all of the thousands of other hearing impaired Americans who have expressed their support for this legislation and, perhaps more importantly, are working so energetically to provide hearing impaired Americans with the equal opportunity that has been so graphically demonstrated by you all and previous witnesses.

I would urge you as organizations and as individuals to contact your elected representatives in support of this and other legislation that is, I think, so urgently needed.

I would also like to point out again it is one thing to introduce legislation. It is something else to have it enacted into law. For the enhanced likelihood of that, we owe a great deal of gratitude to Senator Inouye who, as we all know, is perhaps the most highly respected member of the United States Senate.

So I urge you to continue your involvement, and I urge you to contact me and all of our other elected representatives so that we can continue this effort and see it reach at least one milestone before the end of this calendar year.

I think you wanted to say something, Mr. Sonnenstrahl.

Mr. SONNENSTRAHL. Yes, sir. This is my first experience, and I am a little bit nervous. I realize that there were three other issues that I failed to bring up. Would you mind if I added them at this point?

Senator INOUYE. Please proceed, sir.

Mr. SONNENSTRAHL. The issues are of including hearing impaired people in the decisionmaking process and in developing standards. I would also like to include the effective visual alerting system, a VAS which would transmit telephone, intercom, paging devices and doorbell devices to alert hearing impaired individuals.

My fourth comment is to include repair and replacement services for TDDs and VAS, so that program be included so that telecommunication services not be disrupted.

Another element is the support for international TDD logo contest which will be held at Gallaudet University's conference, The Deaf Way, an international festival and conference on the language, culture and history of deaf people in Washington, D.C. That is going to be co-sponsored by TDI.

The final selection in that competition of the logo contest should be recognized by the Federal Government.

I would also like to make a comment with respect to your question relating to whether TDDs are compatible with all pay phones.

There are, with higher technology, many pay phones with transmitters are not compatible with the TDDs. Many of them have phone cords, which are too short to be connected with the TDD coupler. A pay phone has a shelf that is too small to hold a TDD. I rarely see a pay phone close to a electric wall outlet for the TDDs.

So I would like to thank you for giving me permission to make those additional comments.

Senator INOUYE. I think the points that you brought up are very telling ones.

I would like to have all of us note that this is the first attempt by this committee to work upon legislation to assist the deaf and the hearing impaired. This is the first step, and like all measures, the first step is the most important.

We want very much to send a message to the 24 million deaf and hearing impaired throughout this Nation that this Congress of the United States is prepared to do everything possible to make all citizens equal.

In order to do this, we will need your help; therefore, as I have with all witnesses, I hope that you will make yourselves available to assist us in the development of this measure.

As you must have noted, this measure was drafted and developed by those without hearing impairment. So in the process we may have been a bit insensitive, but I can assure you it was not deliberate.

We want this first step to be the correct step. At the same time, we want very much to pass this measure before the end of this Congress, and we have every intention of doing so.

How many of the deaf and hearing impaired in the United States have TDDs?

Mr. SONNENSTRAHL. They make about 350,000 TDDs that are in existence, and, of those, 200,000 are in operation.

Mr. TAYLOR. I would like to add to Mr. Sonnenstrahl's comments. I would like to give you an example of the State of California. One year ago the state set up a relay service. After that, there were many, many more people coming out from the woodwork, buying those TDDs. The predicted number, the projected number of calls at that time initially was very low. Now California has doubled their relay service.

I expect the same thing will happen everywhere in the United States.

Senator INOUYE. You have indicated in your testimony that most of the communications by the deaf or hearing impaired would be among themselves, the deaf calling the deaf.

About how many calls would the deaf and hearing impaired make to those without that impairment?

Mr. TAYLOR. For the State of California, as I indicated in that example, they started with 75,000 calls per month, and the current number has increased to 200,000 calls per month. The projected figure for 1990 is that the calls will go up to 400,000. That represents all communication between hearing impaired and hearing people.

Mr. SONNENSTRAHL. That is limited to California alone.

Senator INOUYE. You must forgive me for my ignorance, but are the TDD numbers listed in the phone directory?

Mr. SONNENSTRAHL. It varies from state to state. There are some places where they print the number and in parentheses they will indicate TDD; and some do not. But in general, deaf people do not want their number listed at all because we do not want to get voice calls from salespeople.

It is very frustrating to answer a phone on a TDD which comes out to be voice and we have no way of communicating with them. So instead, deaf people rely on the directory which lists only TDDs. In general, they do not bother to read the Yellow Pages because they know that these numbers are inaccessible. But with the telephone relay service they will be able to use those general directories.

Right now, there is a dependence on TDDs, the TDD lists and the directories alone.

Senator MCCAIN. Mr. Chairman, my staff informs me that in the metropolitan area there are only two numbers listed in the metropolitan phone book of TDDs, and both of those are at Gallaudet College.

Is that correct, Mr. Sonnenstrahl?

Mr. SONNENSTRAHL. What do you mean by "metropolitan numbers"?

Senator MCCAIN. The phone directory.

Mr. SONNENSTRAHL. What we have, if I remember right, about 2,000 numbers within the Maryland, D.C., and Virginia listing. Within our directory, from our past experience, I would say that is about 10 percent. In other words, there are more TDDs than what

we have listed. So there is probably about 20,000 actual TDD numbers which are available within the three states.

Senator McCain. I was talking about not in your directory, but in the directory that is sent to everyone, the phone directory that is sent to everyone.

Mr. Sonnenstrahl. Are you speaking of the regular directory, the regular phone directory, or the TDD directory?

Senator McCain. The regular directory.

Mr. Sonnenstrahl. Oh. I do not bother to look at that directory, so I am afraid I cannot answer you.

Mr. Taylor. Let me give you an example. In Rochester, New York the hearing telephone book, the public telephone book, does not have many TDD numbers listed for the simple reason of security, because many deaf people are afraid that if burglars were to look at the phone book and notice that there is a TDD listing, that means that person is deaf, and they can break into the house.

If the person living there, being deaf, would be unable to hear them breaking into the house. That is what goes through many deaf people's minds. That is the reason for the reticence of putting down TDD numbers within the regular directory.

Senator Inouye. Mr. Sonnenstrahl, as I have indicated, by the end of this year we hope to have every Senate office with a TDD-accessible telephone.

Where do we put our numbers; in what directory?

Mr. Sonnenstrahl. It varies from place to place. There are some states which have their own local TDD directory. If I remember right, there are approximately 30 different directories. All of them are local. There are some which are sponsored by volunteer groups, and there are some which are sponsored by the local telephone companies.

The TDI directory is the only one which is nationwide, which has a national listing of TDD numbers. We would be very happy to help you in distributing the government numbers throughout the country, and we would be very happy to work with other directory publishers as well.

Senator Inouye. It would be a shame if all of us installed TDD-accessible telephones and no one called us.

Mr. Sonnenstrahl. I would like to caution you. Do not expect the public awareness of TDD numbers within the Federal Government to be that prompt. There is a difference from the regular marketing approach where a company, for example, Sears, decides to have a sale, and they print an announcement in their local newspaper to the public, they get results within 24 hours.

When it comes to the hearing impaired community, it takes a much longer time to let the deaf public, the deaf community, know, and the results may take a few months to one year to get those results.

So that is, I would not say a big mistake, but I would say that is an issue among people who want to install TDDs. They expect to get a lot of phone calls within one week, and after waiting a few weeks they give up, and they do not bother to use that TDD.

I would recommend patience, to let the number stay and leave the TDD there. I am sure that within time you will be getting a lot of phone calls. I have been getting many phone calls when you look

at the number, the listings. I will call that number, and I will find that that number is inaccessible. No wonder if that was that 16 percent of the Senators' offices, whether they are there or whether they are responding.

I really have not done a survey, but I am just wondering about that, too. So what I am trying to say is please be patient and be patient with the slow marketing among the deaf community, so to speak.

Senator INOUYE. Obviously we have much to learn, sir.

Mr. SONNENSTRAHL. So do we.

Senator INOUYE. Once again I thank you all, Mr. Sonnenstrahl and all of the witnesses who have been with us this morning. Your testimony has been extremely helpful.

May I once again ask all of you to avail yourselves to the staffs of Senator McCain and the committee to assist us in drafting a measure that will be meaningful to you and useful to you.

We hope that the measure we pass will be sensitive to your concerns.

With that assurance and expressing my gratitude, this hearing is adjourned.

[Whereupon, at 11:42 a.m., the hearing adjourned.]

ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

STATEMENT OF DEBORAH SCHMITT, SENIOR STAFF TECHNOLOGIST, BELLCORE (BELL COMMUNICATIONS RESEARCH)

The Senate Commerce Subcommittee on Communications is considering S. 2221, legislation which, among other things, would implement a telecommunications message relay system to provide access for the deaf and hearing impaired to federal departments and agencies.

Message relay services allow hearing impaired persons using a Telecommunications Device for the Deaf (TDD) to communicate over the telephone with a hearing person who does not have a TDD. Currently, message relay services, which are operational in several states, rely on a special relay operator using both TDD and voice to place calls and translate for each party. the operator reads his or her TDD screen and speaks the text to the hearing party, then transcribes the spoken response onto the TDD for transmission to the deaf person.

The labor costs associated with this process are inherently high, given the use of the operator to place the call and the waiting involved while both parties frame their responses. Current estimates show a per call cost of approximately nine dollars. The process is also inconvenient and lacks confidentiality. The authors of S. 2221 obviously recognize these draw backs because the bill contains a provision directing the FCC to plan for the evolution of a hardware-based alternative to the federal relay system.

Bellcore, the research and development subsidiary jointly owned by the seven regional Bell holding companies (RHCs), has conducted a great deal of research into speech recognition/speech synthesis technologies. As a result of this research, Bellcore is developing a series of telephone network-based services referred to as the Telecommunications Network for the Deaf (TND), which RHCs could eventually offer to automate the message relay service by varying degrees.

TND presently exists in several laboratory forms. Each has been demonstrated extensively and received a positive response. These systems are the groundwork for three separate but related TND services.

TND1 automated the dialing of the call. Whether the call is made to the relay service by the deaf or hearing person, that person will be asked who the called party is (if stored by name) or what number is desired. The TND1 software (located in a telephone center location) will then dial the number, confirm a ring, and once the call is answered, hand it off to the relay operator.

TND2 will enable deaf persons to call and converse with hearing persons, using touch tone recognition or small vocabulary, speaker independent* speech recognition and speech synthesis. These calls are initiated by the deaf person. The system dials the number desired and announces to the called party that a deaf person is on the line. It then converts the deaf person's message, as typed on the TDD, into synthesized speech and transmits it to the hearing person. A number of protocols, spoken by the synthesizer, offer the hearing person a way to respond to the deaf person's TDD output (as in, "Press 1 for yes, 2 for no" or "say yes or no", etc.). Finally, the system transmits this response back to the TDD of the deaf person. If necessary, the call can be handed off to a relay operator at any time.

TND3 is a fully automated system, one step beyond TND2. Using speaker dependent* speech recognition as well as speech synthesis, it will enable a hearing person to use a normal vocabulary to speak in response to the message from a deaf person. the telephone office equipment will convert the voice into text for transmission to the deaf person's TDD.

The TND services are still in a research phase and are not expected to be available to serve the public in the near term. However they offer much future promise for overcoming the disadvantages of the present message relay system. Software and

*Speaker independent speech recognition does not require a speaker to train the system to recognize his/her voice, whereas speaker dependent speech recognition requires frequently called hearing persons to train the system ahead of time to recognize their voice.

equipment located in telephone company offices would be accessible to large numbers of people. This sharing of costs, coupled with significantly diminished labor costs for special relay operators, should enable far greater numbers of hearing impaired persons to have access to such services. In addition, conversations using an automated system will be private, convenient, and, in short, similar to those enjoyed by the hearing population.

Bellcore will continue its work on the technical parameters of services such as TND, believing them to be a logical complement to exchange and exchange access services envisioned for the future intelligent telephone network.

STATEMENT OF PAUL J. SINGLETON, CHAIR, NATIONAL ASSOCIATION OF THE DEAF, TDD RELAY, TASK FORCE

Today I approach before the Senate on the behalf of the deaf community across the nation in supporting Senator McCain's bill. As he eloquently said in his introduction of the bill a couple of weeks ago, "The ability of the hearing-impaired to communicate with the Federal Government and for the Government to communicate with all its citizens is a necessary element for the efficient and representative management of this society in all its aspects. It is the responsibility of the Federal Government to lead the way in seeing that the technology is utilized to the fullest extent possible."

I have paid federal taxes for the past 10 years. I was born deaf, and so have my father, grandfather, and my great grandfather. We all have three things in common; we have hereditary deafness, we come from California, and we are lifetime federal taxpayers.

I must mention the fourth thing in common here, because I am sure all of us have never called the federal government using a telephone. This happens because the federal government has not been accessible to us. We could not call them using a TDD (Telecommunication Devices for Deaf). We had to drive many miles to a federal agency and communicate with them through the paper and pencil method.

When technology made it possible to have typewriters converted into TDDs (with modems in them), we could "type" through the telephone system. However, TDDs only talk to TDDs.

TDD Relay technology, which utilizes a third party interpreter to relay TDD messages into voice messages and vice versa, have emerged in the past 6 years. Volunteer relay organizations have sprung from churches, private nonprofit organizations, and deaf community service agencies. Getting through these local TDD relay services is getting to be more difficult because of limited resources or heavy use.

Gallaudet's new President Dr. I. King Jordan have pointed out, "The deaf can do anything a hearing person can do, but hear." Many of deaf citizens do not hear enough to talk on the telephone and we depend on a TDD to use the telephone.

With the 1973 Rehabilitation Act and Section 504, federal government was required to be accessible to the disabled. The Architectural and Transportation Barriers Compliance Board established a pilot relay program—the Federal Relay Service (FRS) in 1985 for Washington, D.C. area. This pilot program will expire this August. This is strictly a local TDD relay service (with area code 202), although it is a federal service. People who live in Washington area do not pay long distance rates to access the FRS. I am sympathetic for these federal taxpayers from California, Iowa, and Arizona. Will they pay long distance telephone rates to receive federal assistance? Would they access and consume the federal services that they paid for? The federal government, as Senator McCain has said, has a responsibility to serve its constituents. The Federal Relay Service will serve the purpose of telephone access by the deaf, only if it is a nationwide system and accessible to everyone (with a toll-free 800 number). This centralized program will allow every federal agency telephone to be accessible with cost-effectiveness.

The Federal Communication Commission, in its intent to comply with the Communications Act of 1934 (passed in order to provide the country with efficient, affordable, and accessible telephone service), has opened a comment period and a reply period this summer to consider specific proposals on how to implement nationwide TDD relay services immediately, accessing not only to the federal government, but to anyone wishing to call interstate (private industry, friends, etc.).

One large concern remains with the new FCC intent to accompany TDD users. The FCC intent is to implement a nationwide TDD relay service good only for long distance calls across statelines (interstate). The FCC in recent years has left the intrastate issue to individual states. What good can a nationwide TDD relay service be if it is not accessible also for intrastate callings?

I represent the National Association of the Deaf as its Chair of TDD Relay Task Force. Senator McCain has introduced this important legislation, affecting only the federal government. This is a start in ending telephone obstacles by the deaf taxpayers in accessing the federal government. The next step would be to end obstacles to the total telephone system (other than federal government).

A deaf Arizonian should be able to pay the same rate using the telephone as a hearing Marylander in accessing to any federal government agency in the U.S.

When the day comes that I can dial a telephone and use a TDD to call anyone in the U.S.; my children, probably deaf themselves, will have no excuses to call any Internal Revenue Service branch anytime of the day and ask why their income tax check has not arrived.

We ask that you insert a timeline for implementation of this important communication service. A major reason for this request is that relay technology is available now. It is more or less a matter of immediate implementation.

On the funding matter, think about the revenues the federal government would receive in the additional telephone use by the deaf taxpayers!

Senator McCain, you have the vote of support from deaf people all over the country in introducing this legislation. It is now up to the rest of Congress to implement a close telephone communication relationship between the federal government and the deaf community.

I will bring a telephone handle without the telephone, and present it to Congress. I will say, "If you do not carry this legislation, please use this telephone handle to call me and let me know."

Thank you.

TELECOMMUNICATIONS FOR THE DEAF, INC.,
Silver Spring, MD, March 24, 1988.

Hon. Senator JOHN MCCAIN,
Russell Senate Building,
Washington, DC.

DEAR SENATOR: We are pleased with and congratulate you on introdcuing your bill which has the aim of expanding access to our national telecommunications system by hearing impaired citizens.

With the bill in effect, there would be more effective lines of communication between hearing impaired individuals and the federal government. The unfortunate lack of knowledge of deafness too often found in federal government offices would be minimized and hearing impaired people's abilities would be maximized.

As the publisher of the International Telephone Directory For TDD Users, we are looking forward to improving the knowledge of and participation in our great democracy among hearing impaired people which, sad to say, needs considerable improvement. However, the recent united action at Gallaudet shows what can be done when hearing impaired people have access to telecommunications. Without the widespread use of the TDD, it is doubtful that this would have happened.

If there is anything we can do to be of assistance to your office in implementing this program, please contact us.

Sincerely,

ALFRED SONNENSTRAHL,
Executive Director.

GALLAUDET UNIVERSITY,
OFFICE OF THE PRESIDENT,
Washington, DC, March 25, 1988.

Hon. JOHN MCCAIN,
U.S. Senate,
Russell Senate Office Building,
Washington, DC.

DEAR SENATOR MCCAIN: May I extend the thanks of the entire Gallaudet University community on your endeavors to make telephone communication an accessible reality for all hearing impaired Americans. We were delighted to learn of your proposed bill to expand the national telecommunications system for the benefit of hearing impaired people and others who have a need or desire to interact with this segment of our population.

Although technology has continued to make impressive advances along many fronts over the years, all too frequently the impact or the special needs of some dis-

abled groups are not always taken into consideration. Sometimes, instead of a benefit, such technology results in a form of disenfranchisement for some people.

As you know, only yesterday some of our students and faculty members were at the meeting of the Federal Communications Commission when they expressed enthusiastic support for the directions provided in your proposed legislation. Passage of your bill would resolve a long-standing need to bring hearing impaired people more fully into the communication mainstream of the rest of the country and will lead toward fuller accessibility for both the deaf and normally hearing public who wish to communicate with them.

I am sure I speak for everyone on the university campus when we commend you for your sensitivity, foresight, and ability to move forcefully ahead with this positive action on behalf of 24,000,000 sometimes forgotten American people.

Sincerely,

I. KING JORDAN,
President.

AMERICAN DEAFNESS AND REHABILITATION ASSOCIATION,
Little Rock, AR, March 25, 1988.

Hon. JOHN MCCAIN,
U.S. Senate,
Russell Senate Building,
Washington, DC.

DEAR SENATOR MCCAIN: The American Deafness and Rehabilitation Association applauds legislation you propose to expand the national telecommunication system to benefit hearing impaired Americans.

Accessibility for federal and state government has meant ramps, rails and other physical changes but rarely the purchase of equipment or even interpreter services which would make programs truly accessible to people with hearing losses. Even with excellent legislation on the books such as Section 504 of the Rehabilitation Act Amendments of 1986, governments have chosen to continue discrimination of programs and services for this population.

Students and alumni at Gallaudet University raised the public's consciousness with their frustrations to be heard, and their fervent desire to participate in the direction of a program which was always intended to be theirs. The legislation you propose would demonstrate that the congress does acknowledge hearing impaired persons and values their participation.

We sincerely hope that states will follow the example set by this legislation and that a new awareness will improve the quality of life for over 24 million people.

Finally, conversations through a telecommunication device for the deaf (TDD) take five times as long as spoken conversation. That cost plus the additional cost of the TDD makes communication much more expensive for the hearing impaired consumer. We would encourage you and your colleagues to allocate a significant amount of funds to support the development of technology which could defray or at least reduce the cost of communication for the individual.

Our organization genuinely appreciates your efforts and sensitivity to the needs of hearing impaired persons.

Very truly yours,

GLORIA KEMP, *President.*

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